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THE WERNER GRAMMAR SCHOOL GEOGRAPHY

PART I

BY H. S. TARBELL

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THE WERNER

GRAMMAR SCHOOL

GEOGRAPHY

PART I

BY

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SUPERINTENDENT OF SCHOOLS, PROVIDENCE, R. I.

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NEW YORK CHICAGO BOSTON

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PREFACE.

THE study of geography affords excellent opportunities for the exercise of judgment, generalization, inference, and comparison. In this, the second book of the series, designed for pupils who are completing a course of elementary studies, the special purpose has been to secure the exercise of these powers. This book appeals to the memory of the pupil as little as possible, but to his judgment as much as the material to be studied and the age of the pupil will warrant.

It is evident that there are two orders of treatment of the facts and topics of geography. We may discuss in successive chapters "relief," "climate," "commerce," or we may treat of the "United States," "Brazil," "France," etc.

By the first plan we gather around one topic facts from many regions; by the second we localize in one region facts pertaining to many topics.

Each plan has its advantages and corresponding disadvantages. The first suits the mind of the adult, the second the mind of the youth. The first is liable to spin theories with no frame of place on which to hang them, the second to enumerate facts without explaining their connections or giving reasons for their existence. The author has sought to combine the advantages and avoid the disadvantages of both plans.

The chapters of the book are grouped in three divisions: 1. Preparatory; 2. Descriptive; 3. General and Comparative.

The first division contains those matters of definition, location, relief, climate, products, etc., which the pupil must understand in order to be prepared for the study of the main portion of the book, division two, which is an account of the continents and their peoples.

The third division, in some respects a review, treats in a more general and comparative way some of the topics of the first division in the light of the facts of the second division. The third division, while higher in grade of subject matter and broader in treatment than geographies for common schools have usually been, will, it is hoped, be found comprehensible and interesting to pupils who have studied the earlier divisions.

In accordance with modern thought, considerable attention is devoted to relief, that vertical dimension of the land so much more important than the horizontal dimensions, length and breadth. However, since relief is not in itself of sufficient importance to the pupil to demand much of his time, it is considered only so far as it influences climate and products, and the comfort and opportunities of man. Climate is an element of our surroundings on which we are more dependent than on relief or drainage, and so it has been made more prominent.

Man is the center from which everything has been viewed, and objects have taken a perspective, large or small, as they are near to or remote from human interests. The manner of life, the occupations of mankind, and that portion of history which shows the influence of geographical conditions on human progress, have been accorded unusual, but it is believed, not undue, space.

Special attention has been given to the United States and to Europe. The United States, the Great Powers of Europe, and China and Japan, with their teeming multitudes, are the three great centers of human interest at present, and of hope, or fear, for the future. The remaining parts of the world are dependencies, not indeed politically, but commercially, of these three centers of power and progress. This fact has determined to a considerable degree the space given to the treatment of the various regions.

But few mountains, rivers, capes, and cities are named to burden the pupil's memory with location alone. The effort has been to give him clear and broad views of human life in all important countries, that he may know the conditions

that affect human welfare and the progress which different countries are making.

By making full the general treatment of the United States as a whole and of the several sections, it has been made possible to devote less space than usual to each state, and still to furnish in effect a comparatively full treatment of the several states. By this plan space is saved, and the effort of memorizing reduced.

The same plan has been followed in the treatment of the continents and the several countries therein.

Throughout the book are questions that may be answered from memory of the text, and many others that require thought and can be answered only by the application of the principles given.

The acknowledgments made in the preface to the Introductory Geography should be here renewed.

Hon. Orville T. Bright, Superintendent C. B. Gilbert, and Miss F. Lilian Taylor made valuable suggestions in reference to both books. James Baldwin, Ph.D., the well-known author, carefully read the proofs of both books, and suggested many improvements. Henry Whittemore, superintendent of schools, Waltham, Mass., rendered the same service for this book.

To these acknowledgments must be added here, as elsewhere, the recognition of the constant and valuable assistance rendered in all this work by Miss Martha Tarbell, A.M., without whose aid this series of books could not have been prepared.

The spelling of geographical names in this book is adopted on the authority of The United States Board of Geographic Names, and of the maps issued by the United States Government. The decisions of this Board are approved by the Royal Geographical Society of London, and will probably be adopted within a few years in all English-speaking countries.

In the pronunciation, The Century Cyclopedia of Names has been followed.

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REFERENCES ON METHOD.

KING: Methods and Aids in Geography.
PARKER: How to Study Geography.
CROCKER: Methods of Teaching Geography.
CARVER: How to Teach Geography.
GEIKIE: The Teaching of Geography.
Report of Committee of Ten.
Report of Committee of Fifteen.
The Use of Government Maps in Schools.
JACKSON: Astronomical Geography.
COWHAM: Graphic Lessons in Geography.

GENERAL INFORMATION.

Tribune Almanac. World Almanac. Chisholm's Gazetteer.

The Magazines — particularly Harper's, Scribner's, The Chautauquan, The Century, and The National Geographic Magazine.

The Cyclopedias: The Century Cyclopedia of Names, The Encyclopaedia Britannica, Johnson's Cyclopaedia.

KELTIE: Statesman's Year Book.
BAEDEKER: United States.
GUYOT: Earth and Man. GAGE: Life of Ritter.
MARSH: Earth as Modified by Human Action.
RITTER: Comparative Geography.
KEITH JOHNSTON: Geography, Physical, Historical, and Descriptive.
Geographic Monographs (American Book Company).
SHALER: First Book in Geology.
GEIKIE: Elementary Lessons in Physical Geography.
HUXLEY: Physiography. LE CONTE: Compend of Geology.
SHALER: Story of Our Continent.
MILL: The Realm of Nature.
GEE: Short Studies in Nature Knowledge.
RECLUS: Bird's-eye View of the World.
Lyell's Principles of Geology (Vol. II.).
The Charleston Earthquake (U.S. Geological Survey Report, 1889).
JUDD: Volcanoes. HULL: Volcanoes.
MILNE: Earthquakes.

THE WERNER

GRAMMAR SCHOOL GEOGRAPHY.

1. Land and Water.

Geography. — Were you to travel to some parts of the earth, you would find them quite different from those about your own home. The plants and animals would be different. The people would be raising different crops and cultivating the fields in ways you had not seen before. The mode of life, the language, and the manners of the people would be new and strange to you. Since you cannot travel over all lands to learn about them yourselves, would you not enjoy hearing about these lands from those who have visited them?

Men who have traveled have written accounts of what they have seen, and these accounts have been put together into a description of the earth and of the people who live upon it. Such a description is called *geography.*

Continents. — One of the things to be learned at the very beginning of the study of geography is that this earth is an immense globe or ball. The surface of this ball is uneven and the lower parts are filled with water. The great body of water on the earth is called the *sea* or *ocean.* The parts of the earth's surface not covered with water are called *land.* Land consists of rock and soil. Rock extends under the ocean as well as under the soil.

About one-fourth of the surface of the earth is land. What part is water? The land is in three large masses called *continents* and many smaller masses called *islands*.

The three continents, as you will see by the map (9)[1] are the Eastern Continent, the Western Continent, and Australia.

What are the three divisions of the Eastern Continent? What are the two divisions of the Western Continent?

As these divisions are very large, they are called *Grand Divisions*. If you call Australia also a Grand Division, how many Grand Divisions are there? Name them. The Grand Divisions are also sometimes called continents.

Land Forms.—Lands which rise high above the level of the ocean are called *highlands;* lands not much higher than the ocean are called *lowlands*. A mass of land rising in a lofty peak or ridge is called a *mountain*.

Highlands in long, narrow tracts make *mountain ranges*. Highlands in broad tracts are *plateaus*.

The highest part of a mountain range is called the *crest*.

Two or more mountain ranges near each other and nearly parallel form a *mountain system*.

Hills are like mountains, but not so high.

Two slopes of land united at their lower margins form a *valley*. High valleys between mountain peaks are called *passes*. Broad tracts of land nearly level are called *plains*. What is the distinction between a plain and a plateau?

Most plains lie between mountain systems or along the coasts of continents and islands. Name all of these land forms which you have seen, and tell where they are.

Oceans.—The word ocean has two meanings; first, the great body of water on the earth, and second, one of the five portions into which for convenience the great body of water is considered to be divided. Find on the map (9) the five oceans. (157.)

[1] Figures in parentheses refer to pages in Part II. Pictures in Part II. are referred to by page and number.

Water Forms.—Bodies of water called lakes lie in the hollows of the land just as the oceans lie in the greater hollows of the earth.

Streams of water on the land are called *brooks* or *rivers*. Rivers are larger than brooks. Most streams run through valleys and receive smaller streams called *tributaries* from side valleys. The place where a stream starts is its *source*, and the place where it joins another stream or a body of water is its *mouth*.

What is the *upper course* of a river? The *middle course*? The *lower course*? In which of these courses do most rivers flow most rapidly?

A large river with its tributaries is called a *river system*; as, the Mississippi River system.

Land and Water Forms.—The land drained by a river is called the *basin* of that river. The land bordering either side of a brook or river is called the *bank*. The bank on the right-hand side of one facing down the stream is the *right* bank. Which is the left bank? What is the distinction between a river system and a river basin?

Land projecting into the water is called a *cape*. Land nearly surrounded by water is called a *peninsula*. The narrow strip of land connecting the peninsula to the mainland is called an *isthmus*.

Water nearly surrounded by land is called a *gulf* or *bay*. A *sea* is a body of water nearly or quite surrounded by land. Seas are really lakes or bays.

A narrow passage of water connecting two larger bodies of water is called a *strait*. Some wide straits are called *channels*.

What is geography? How much of the earth's surface is land? How much is water? What are continents? Islands? Name the three continents. Name the six grand divisions or continents.

What is the ocean? What is an ocean? Name the five oceans.

2. A Glimpse of the World.

Which is the largest continent? What continents join it? What two east of it? What one south of it? Bound each continent and each ocean, first with the map before you and then from memory.

What mountain ranges are there in North America? South America? Europe? Asia?

Find the British Isles. Japan. East Indies. West Indies. Newfoundland. Which is the largest river of North America? In what country is this river? Where is the Amazon? In what country? The Nile? In what country?

Name three countries of North America. In South America, where is Brazil? Chile? Argentina? In Africa, where is Egypt? The Great Desert? Sudan? Cape Colony? In Asia, where is India? China? Japan? Siberia? In Europe, where is England? Switzerland? France? Germany? Austria-Hungary? Italy? Russia?

On the map of Europe find the North Sea, the Baltic, Mediterranean, Black, Caspian. On the map of North America find the Great Lakes, Hudson Bay, Gulf of Mexico, Caribbean Sea.

What river is the outlet of the Great Lakes? Into what gulf does it empty? Name a large river flowing into the Gulf of Mexico. One flowing into the Caribbean Sea.

Central America lies between North America and South America, but it is usually considered a part of North America. By what isthmus is it connected with North America? With South America? What peninsula is north of it?

Name three peninsulas south of Europe. Three south of Asia.

What Isthmus connects Asia and Africa? Where is Bering Strait? Where is the Strait of Gibraltar?

[Be sure that you can readily answer all the questions above. As you learn about new places, locate them with reference to places already known to you.]

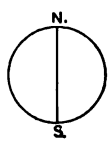
3. Revolution and Size of the Earth.

When a top spins steadily upon a table, there are two points on the surface of the top, one above and one below, that do not seem to move. These points might be called the *poles* of the top, and the line connecting them the *axis* of the top.

The earth turns on its axis once in twenty-four hours, and the ends of its axis are called poles. The axis of the earth is a line through the center about which it turns, or revolves.

What are the poles of the earth? What are the names of these poles? How far apart are they? Let us consider what this question means. Does it mean how far it is *through* the earth from one pole to the other or how far *around* the earth from one pole to the other?

If this little circle represents the earth, and N. shows the position of the north pole and S. of the south pole, the distance from north to south through the circle will be just the diameter of the circle. The distance through the center of a circle is called the *diameter* of the circle. The distance around a circle is called the *circumference* of the circle. [The lines which represent these distances are called by the same names.]



The circumference of the earth is nearly 25,000 miles, and its diameter is nearly 8000 miles. Now can you tell how far apart the poles of the earth are? (157.)

Twenty-five thousand miles is a very long distance. If there were a railroad extending quite round the earth, and you should start upon it in a train going twenty miles an hour, it would take you nearly two months, traveling all the time, to go round the earth. How many days would it take?

The circumference of the earth is divided into 360 equal parts, and each part is called a *degree*. This is true of the circumference of every circle, whether large or small.

4. The Globe.

The earth is represented by a globe. On the globe lines are drawn, by means of which the location of places can be told. The line drawn round the globe just half-way between the poles is called the equator. The lines parallel to this are called parallels. The lines drawn from pole to pole are called meridians.

Meridian is from the Latin word *meridies*, which means midday. Meridians are midday lines, and are so called because all the places on the same meridian have noon at the same time.

When you know how far apart the parallels are, then you can tell how far north or south of each other, places on different parallels are. When you know how far apart the meridians are, then you can tell how far east or west of each other, places on different meridians are. The parallels and meridians enable you to tell where places are, and how far apart they are.

5. Latitude and Longitude.

Distance north or south of the equator measured in degrees is called *latitude*. Latitude north of the equator is north latitude. What is south latitude?

The distance in degrees between the meridians of any two places is called *longitude*. Longitude is usually reckoned from the meridian of Greenwich, a town near London in England having the Royal Observatory. This meridian is called the first, or prime, meridian.

In the United States longitude is sometimes reckoned from the meridian of Washington, which is 77 degrees west from Greenwich. In Part II. this longitude is noted at the bottom of each map.

Longitude is reckoned east and west from the prime meridian, just as latitude is reckoned north and south from the equator; but since there are no "poles" to divide the reckoning of

longitude, it is reckoned half way round the world in each direction instead of a quarter way round as latitude is.

What is the greatest degree of longitude that a place may have? Find the prime meridian. Trace it north and south to the poles. (9.)

Find 180 degrees east longitude on the equator. Find 180 degrees west longitude on the equator. Are the two the same?

Does the map of the eastern hemisphere include any west longitude? How many degrees of east longitude does the western hemisphere include?

What city is in north latitude 51° and longitude 0°? What island is in latitude 0° and longitude 50° W.? What city is nearly in latitude 41° N. and longitude 74° W.? What island is 50° N. and 60° W.?

Which way is a man traveling when he does not change his latitude? Which way when he does not change his longitude? Did you change your latitude or your longitude when you came to school this morning? What place has no latitude and no longitude?

How many degrees are there in the circumference of the earth? How many in half the circumference? How many in a quarter of it? How many from one pole to the other? From one pole to the equator?

What is the latitude of the equator? What is the latitude of the poles? What kind of latitude between the equator and the north pole? Between the equator and the south pole?

6. Zones.

The parallels that are twenty-three and a half degrees from the equator are called *tropics*. The tropic north of the equator is called the *Tropic of Cancer;* the one south of the equator, the *Tropic of Capricorn.*

The parallels twenty-three and a half degrees from the poles are called *polar circles.* The one around the north pole is called the *Arctic Circle;* the one around the south pole is called the *Antarctic Circle.*

The belt of the earth between the two tropics is called the *Torrid Zone.* Torrid means hot, and within this belt or zone is the hottest part of the earth. How many degrees wide is the Torrid Zone?

Between the polar circles and the poles are the *Frigid Zones.* Frigid means cold. These zones are the coldest parts of the earth. How wide are the Frigid Zones?

Between the Torrid Zone and each Frigid Zone lies a *Temperate Zone,* not generally so hot as the Torrid Zone, nor so cold as the Frigid Zones. How wide are the Temperate Zones? In which zone do we live?

On the map below, point out the poles, the equator, the parallels, the tropics, the polar circles, the torrid zone, the two frigid zones, the two temperate zones. Where is the north frigid zone? The south temperate zone? Show what parts of the earth are in north latitude; in south latitude.

What countries are crossed by the equator? What by the parallel of 20° north? What by 40° north? (9.)

What countries and cities are on or near the meridian of New York? Of Chicago? Of London? Of Constantinople? (9.)

7. Land Waste.

The land surface of the earth has come to its present shape and appearance through the action of two kinds of forces, one of which has raised it up, and the other worn it down.

The wearing away of the land, as well as its elevation in many places, is going on at the present time. (9.)

Work of Rivers. — Have you noticed how muddy or roily the water in the little streams is after a shower? Along the streets and roadsides, down the hillsides, and across the meadows, pour streams of water carrying with them a great amount of clay or sand.

In the larger and more rapid streams, even pebbles are forced along by the water. In great mountain torrents, when

the spring freshets or the heavy rains have come, stones of considerable size are moved onward by the rushing waters.

Dip up a pailful of muddy water from a stream after a shower, and let it stand until the sediment has settled, and see what a quantity of mud the stream is carrying. Every pailful of water carries perhaps a cupful of sediment in it.

Think how many pailfuls run by in a minute in the streams, and how much earth each stream carries every minute. Think how much this is in a day, and how much the great rivers must carry.

The great river of our country, the Mississippi, carries down into the Gulf of Mexico a million tons of earthy matter a day which it and its tributaries have gathered from its great basin. What a vast number of boats would be required to move such an amount!

Where does the river get the earth or soil it carries?

Do you not see that the river must be constantly digging away the soil from the upper part of its basin?

Look at the map and see what a large peninsula there is at the mouth of the Mississippi. How do you think that peninsula has been made? Do you think it is growing larger at the present time? Has the Mississippi a rocky bottom at its mouth? Give reasons for your opinion. (38.)

Some other rivers carry much more sediment than the Mississippi.

The Grand Canyon of the Colorado (102. 7) is a wonderful instance of a river cutting its bed down through solid rock. Here for 250 miles the river has cut its bed downward 4000 feet, or about four-fifths of a mile. While it has been doing this, it has carried away all the soil and rock of its upper basin for a mile in depth, and 500 miles in width. It is true it has been a long time in doing this, but rivers have been running a long time. (42.)

Effects of Heat. — Heat has much to do in preparing rock and soil to be taken up by water.

During the daytime the surface of the rock becomes heated, and at night it cools. When these changes are considerable, they crack the surface of the rock for a little distance. Rain then works its way into the crevices. The water, in freezing, expands and throws off particles of the rock, and, sometimes, even large blocks. If you go to a steep mountain side, you will find, lying at its foot, great masses of rock that have fallen from the heights above, and are now exposed to the further changes to be made by heat and water.

Effects of Acid. — Water, especially water that has acid in it, dissolves some rocks very rapidly.

The air always has in it a little acid that the rain absorbs and carries into the rocks. This acid slowly dissolves rocks.

Mineral springs are springs whose water has an unusual amount of mineral matter in solution. Almost all water in springs and rivers has mineral matter in it which has been taken from the rocks through or over which it has passed. It often happens that dissolving one part of a rock leaves the other parts ready to crumble and be carried off by running water.

Alluvial Lands. — In one way or in another, water is all the time carrying away soil and broken-up rock toward the sea. All the streams are digging away the soil along their upper courses, and carrying it down to be left somewhere along their lower courses.

When water carrying a large amount of sediment begins to run more slowly, some of the sediment is deposited on the land over which the water runs.

When there are heavy rains or freshets from melting snows in the upper course of a river, the channel is often too small in its middle or lower course where the current runs less rapidly, to carry the great volume of water sent down to it, and the river overflows its banks. When it does this, the water spread over the flooded plains runs less rapidly than in the deeper channel, and some of the matter carried along is depos-

ited upon the overflowed land. This deposit is called *alluvium*, and lands made up of it are called *alluvial lands*. The lands along rivers in their lower courses are usually alluvial lands, and are generally very fertile.

As the alluvium is mostly deposited where the water begins to slacken its rate of motion, the banks of a river sometimes receive a greater deposit than the borders of the plain more distant. This raises the banks of the stream; and, as the bed of the stream rises likewise, the river, with its banks, finally becomes higher than the plain through which it runs. The lower Mississippi is an example of this.

Deltas. — The water that overflows the banks of such a river cannot get back into the channel again, near the place of its overflow, but must reach the sea in some other way. Often the overflowing stream cuts away the elevated rim which forms its bank, and makes a new channel for a part or all of its waters. When a river has several outlets the land between the outer ones is called a *delta*. This name is also applied to the alluvial deposit at the mouth of a river.

Bars. — When a river reaches a lake, sea, or ocean, its current is checked and the sediment it is carrying along is dropped. This fills up its mouth and makes a *bar*. If the stream enters deep water or has a very strong current, it may spread the sediment so much that no obstruction to its current is created.

The movement of the ocean waters at a river mouth may be such as to prevent the formation of a delta. The waste material borne along may be swept out to sea and deposited over the bottom, or it may be borne along the shore and with other material carried by waves and currents be formed into bars parallel to the shore. Such is the case along the South Atlantic coast of the United States, where these bars are called *banks*. Between these banks and the coast are long, narrow passages of shallow water called *lagoons*.

How much soil does the Mississippi River carry down towards its mouth? Where does it get this soil? What is said about the Grand Canyon of the Colorado?

How do the changes of heat and cold affect the amount of matter carried downstream by rivers? What are mineral springs? In what part of their course do rivers usually run most rapidly? What is alluvium?

Explain how rivers sometimes form banks higher than the plains over which they run. What is a delta? What are lagoons?

8. Volcanoes.

Upward Movement of the Earth's Crust. — The land must have been raised before it could be worn down. Some mountains have been raised suddenly, but most mountain ranges have come to their present height by slow and imperceptible upward movements that may be going on even now.

Heat of Springs and Mines. — There are many proofs that the interior of the earth is very hot.

There are a great many hot springs in the world, some even as far north as Iceland. The water of these springs has been heated by the rocks through which it has passed. (83. 4; 81.)

Most mines, too, are hot, and, as a rule, the deeper the mine, the hotter it is. In some mines the heat is so great that the miners can work but a few minutes at a time, and some mines can be dug no deeper on account of the heat. From many observations it has been found that the temperature increases one degree with every sixty feet of descent into the earth.

Volcanoes. — There are several hundred places on the earth where there are openings from the surface downward to the heated interior, or at least to places below the surface where the heat is so great that the rocks are melted. It is supposed that water from the surface gets down to these lakes of melted rock, or places of excessive heat, and is expanded into steam, producing an explosion which sometimes throws the steam and melted materials high into the air. The matter thrown out

through these vents falls back around the mouths of the holes and at length forms cone-shaped hills. Such a hill is called a *volcano*, and the funnel at the end of the opening through which the matter is thrown is called a *crater*. The melted rock is called *lava*. (147. 6; 100. 3.)

When an explosion occurs, the lava in the opening is first blown out, usually in fine particles called ashes. Hot water, steam, sand, and pumice-stone are often thrown from volcanoes.

Lava sometimes issues from the side of a volcano instead of from its top. Can you explain this? It is believed that lava has also issued from cracks or fissures where no cone has been built.

The amount of lava thrown out at an eruption is often enormous and covers many square miles to a great depth.

An *active* volcano is one that sometimes has eruptions. An *extinct* volcano is one that has not recently had any eruptions.

Where Volcanoes are found. — The most famous volcanoes in the world are Etna in Sicily, Vesuvius near Naples in Italy, Hekla in Iceland, Cotopaxi and Chimborazo in South America. (128. 8; 129. 1, 7; 109. 3, 7; 106. 2, 6.)

On page 9 of Part II. most of the volcanoes of the world are indicated by red dots. Begin at Cape Horn and trace the line of dots around to Cape of Good Hope. You will find groups and lines of dots outside this volcanic belt or "circle of fire." Kilauea in Hawaii is a noted volcano. Find it on the map. (61.)

Deep-sea dredging shows that volcanic waste is distributed very widely over the bottom of the ocean.

There seems to be a connection between volcanoes and the ocean. There are very few active volcanoes in the interior of any of the continents.

9. Earthquakes.

Earthquakes are tremblings or jars of the earth's crust caused by some force beneath it. These jars or shocks are sometimes so great as to shake down houses, and to cause

great waves in the ocean. Usually a deep rumbling, which sounds like cannonading underground, precedes or accompanies earthquakes. (144. 7.)

An earthquake occurring under the bed of the ocean produces immense waves that rush upon the shores perhaps hundreds of miles away.

In one such earthquake (1868), off the shore of South America, ships were carried inland and stranded high on the mountain sides. Which ocean? What range of mountains?

Some earthquakes are caused by explosions below the surface that do not break through to the surface. Others are caused by the cracking of the layers of rock beneath the surface of the earth as they are pressed or bent by the up and down movement of the crust that is slowly going on.

Often at the time of an earthquake the earth cracks open to a considerable depth. Some portion of the land may rise and remain higher than before. Or it may sink and remain lower, sometimes forming the bed of a lake. An earthquake in India has made a lake larger than the state of Rhode Island. (142. 7, 8.)

What is a hot spring? At what rate, as a rule, does the heat increase downward from the surface of the earth? What is a volcano? What is lava? Name three remarkable volcanoes. What are earthquakes?

10. Climate.

By climate we mean the average weather of a place or region, not the weather on any particular day.

The climate of a place is produced chiefly by three things: temperature, moisture, and winds.

Climate not subject to rapid changes is called *equable*. Climate subject to great changes during the year is called *severe* or *extreme*. Land is more readily heated or cooled than water.

In summer is the land of the continents warmer or colder

than the water of the adjacent ocean? How is it in winter? We may call the climate of places distant from the ocean *continental,* and the climate over the ocean or on its shores *maritime.* Which kind of climate changes most during the year, continental climate or maritime climate? The climate in the interior of the northern continents is subject to great change during the year; of the southern, to little change.

11. Isotherms.

If we had a record of the thermometer for the entire year in a great many places in different parts of the world, and if then we should draw on a map lines connecting all places having an average temperature of 50 degrees, and other lines connecting all the places having 60 degrees, and so on, we would have lines connecting the places having equal heat. These lines we might call "equal heat" lines, but the common name for them is *isotherms,* which means the same thing. On page 26 of Part II. you will find a map showing some of the main isotherms around the world.

Trace each isotherm from one side of the map to the other. Do the isotherms run directly east and west? Would you expect them to do so? Do they run more nearly east and west over the land or over the water? Can you think of any special influence the land may have on the temperature of a place?

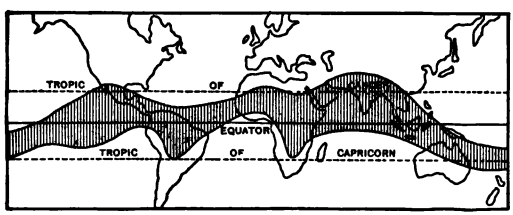
Notice the isotherm of 80 degrees on each side of the equator. Between these is the *hot belt.*

A climate whose average temperature is 80° to 82° is found only between the tropics, and is hence called a *tropical* or hot climate. One whose average temperature is 70° to 80° is a very warm climate, such as is usually found in the temperate zones near the tropics. This is called *subtropical.* From 50° to 70° is the *warm temperate,* and 32° to 50° the *cool temperate.*

A climate whose average temperature is below 32° is called an *arctic* climate. Why?

Find on the map the tropical belt. Trace it round the earth and notice what grand divisions it crosses. Do the same with the subtropical belt. The warm temperate. The cool temperate. The arctic.

There are many times more land north of the equator than south of it, and this land heats more readily than the ocean heats. From this it results that the hottest part of the earth is not just at the equator, as we might suppose, but six or seven hundred miles north of it.



The Hot Belt of the Earth.

Here is a map showing the hot belt of the earth. Notice how far north of the equator its center lies. That the land masses of South America, Africa, and Australia draw the hot belt southward is evident; and the effect of Mexico, northern Africa, and southern Asia is equally evident.

12. Effect of Elevation and Slope.

The temperature falls as the height above sea-level increases. It is found that a difference of 300 feet in the altitude, or elevation, of a place makes a difference of one degree in temperature. Hence the tops of high mountains are very cold.

What is the average temperature at sea-level in the torrid zone? [See Isotherm map, 26.] What is the average temperature in the torrid zone of places 3000 feet above the sea? Of places 6000 feet? 12,000? 24,000?

In warm climates the temperature found by one who ascends a mountain side varies as that does which one finds when

traveling from the equator toward the pole. Does vegetation vary likewise from the base to the summit of a mountain?

The direction in which the land slopes affects the temperature. If the slope in northern latitudes is towards the south, the rays of the sun strike the land more directly, and hence the land is heated more.

Effect of Slope.

Is it warmer on the north side or on the south side of a hill? What effect does a slope to the north have? How does this affect the drainage basins in the northern continents?

REVIEW QUESTIONS.

What is climate? What are the three things that mainly affect climate? What is an equable climate? A severe? A maritime? A continental? What is a tropical climate? A subtropical? A warm temperate? A cool temperate? An arctic? Where is each of these climates found? What are isotherms? Mention the effect of elevation on climate. The effect of slope on climate.

13. The Cause of Wind.

When a bonfire is built out of doors, the air above the fire is heated and, becoming lighter, rises swiftly upward, while the cooler air on all sides rushes in towards the fire. At a large fire, the heated air carries smoke, sparks, and burning brands upward to a great height, while a strong wind blows towards the flame from all directions.

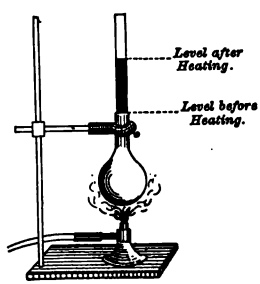
Hang two thermometers in the warm schoolroom on a cold day. Hang one of them as near the ceiling as you can, the other near the floor. Which shows the higher temperature?

If on a cold day a ribbon is held near the top of the door in a schoolroom, and another near the bottom, and the door is opened, what will happen? Where does the cold air come in, at the top or at the bottom of the door?

When the air at any place becomes heated more than the surrounding air, what movements take place?

You must not think of the heated air as rising and drawing in the surrounding air, or that the cold air rushes in to fill the place which the warm air has left. When one pours water into a jar having corks at the bottom, the water, because it is heavier than the corks, flows under and bears up the corks upon it. For the same reason heavier air flows under and lifts lighter air. The main thing which you need to know in order to understand the causes of the movements of the winds is that heavy air will force itself under lighter air.

The effect of heat in making bodies lighter, bulk for bulk, than they were before being heated may be shown by the following experiment.



Effect of Heat.

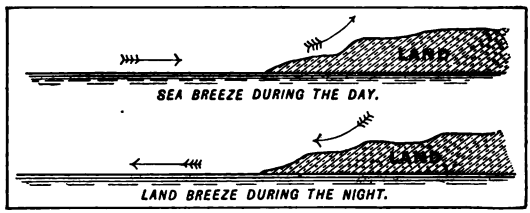
Take a flask having a long neck, like the one in the figure; fill it nearly full of water and apply heat. The water will rise in the neck of the flask. This shows that the water occupies more space after being heated. Its weight remains the same. Hence a larger bulk of warm water may weigh the same as a smaller bulk of cold water. Warm water weighs less than the same bulk of cold water.

Why does heated air rise? Air is made lighter by heating it or by reducing the pressure upon it. The higher the altitude the less the pressure upon the air by the air above it; hence the air at great altitude is lighter, though colder, than the air below.

In the warm days, which is warmer, the land at the seashore or the water? During the night, which becomes cooler, the land or the water?

If the land is warmer than the water, is the air resting upon it lighter or heavier than that resting on the water? In this case, will the air from the land move under the air over the water, or will the movement be in the opposite direction?

Study the figure below, and tell why the air moves as the arrows indicate.

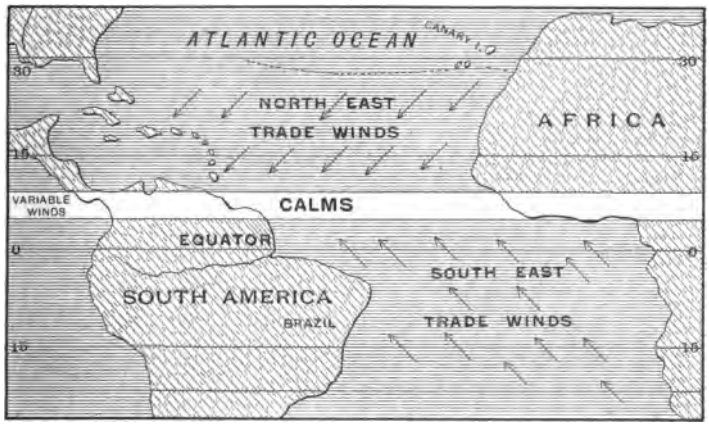


Land and Sea Breezes.

14. Movements of the Winds. (9.)

Trade Winds. — Where is the heated region of the earth? The wind for a certain distance from the equator blows toward this hot belt throughout the year. These winds are called *Trade Winds.*

In the figure below you can see their direction over the Atlantic Ocean. Over the Pacific Ocean their course is the same.



Trade Winds.

Calm Belts. — There are three calm belts, or regions of little wind, extending across the Atlantic Ocean and the Pacific

Ocean. One is near the equator, the others are about lat. 30° on each side of the equator. The latter are called the Calms of Cancer and the Calms of Capricorn, because not far from the tropics.

Variable Winds. — Between the Calms of Cancer and the Arctic Circle, and between the Calms of Capricorn and the Antarctic Circle, are two great regions of variable, or frequently changing, winds. Though these winds are said to be variable, they blow toward the east more steadily than in any other direction.

Name the prevailing winds in order from the Arctic Circle to the Antarctic.

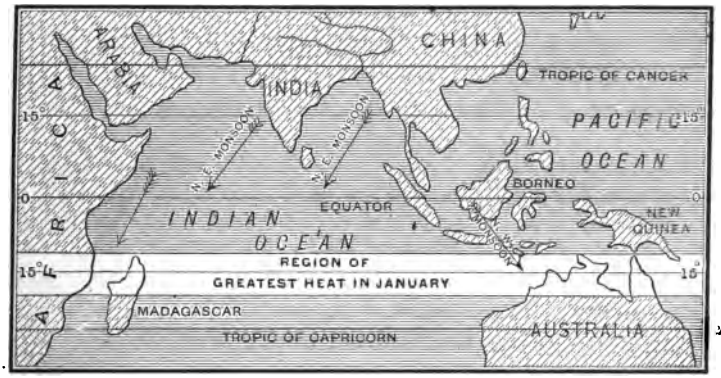
July Monsoons.

Monsoons. — Because the Indian Ocean lies mostly in the torrid zone, with large land masses on three sides, its winds are different from those of the Atlantic Ocean and the Pacific Ocean.

When the sun is north of the equator, the land of Asia south of the Himalaya Mountains becomes so intensely heated as to be much warmer than the Indian Ocean. How does the slope affect the temperature? The wind, therefore, from the Indian Ocean blows toward the land. This continues for about five months, until the sun passes south of the

equator, and the interiors of Africa and Australia become the most highly heated parts of that region. Then the wind shifts and blows from a portion of Asia and of the Indian Ocean over Africa, and from another portion of these regions over Australia.

These winds are called *Monsoons.* They are much like the trade winds, except that they reverse their direction every half-year.



January Monsoons.

What is the chief cause of winds? Explain the movement of the air when there is a large fire out of doors. Explain the movement of the air through a stove when the fire burns briskly.

How many calm belts are there on the earth? What are trade winds? In what direction do they blow? What is the general direction of the winds in the cool temperate zones?

What are monsoons?

15. Movements of the Waters of the Ocean. (26.)

There are three movements of the waters of the ocean: waves, tides, and currents.

Waves. — Waves are moving ridges of water caused chiefly by the friction of the wind.

Tides. — On the ocean shore the waters rise and fall every few hours. At one time they are high and cover the rocks, or come far up on the beach; in a few hours they are low, and the rocks are bare. This regular rising and falling of the water is called *tide.*

From high tide to low tide is a little more than six hours. The difference in height between high tide and low tide is not more than two or three feet in the middle of the ocean, but on the shores of the continents it is sometimes many feet.

Where the shape of the shores is such as to force the waters into a narrower space as the tide moves up the bay or river, the tide necessarily becomes higher the farther inland it goes.

The Bay of Fundy is a large bay on the Atlantic coast of America, and is noted for its high tides. The great mass of water of the tide finds its channel narrowing as it moves up the bay between Maine and Nova Scotia. In order that the narrower part of the bay may hold as much water as the wider part, the water must be deeper. So by the time the tide-wave has reached St. John, the tide rises about thirty feet; and, at the head of the bay, instead of rising gradually, it advances in a foaming roller, called a "bore," several feet in height. At the end of six hours, when the crest of the tidal wave has come, the water has risen sixty or seventy feet.

Tides are caused mainly by the attraction of the moon. They move westward around the earth as the sun and the moon do. They rise each day about one-half hour later than on the preceding day. The sun exerts an influence on the tides a little more than one-third as great as that of the moon.

In the open sea the water simply rises and falls, but in narrow channels it makes a forward and a backward current. These currents are, in many places, of great value; for they prevent the formation of bars at the mouths of rivers. They also in some rivers help carry ships inland to cities with good harbors, and out to sea again when ready for another voyage.

Most rivers into which the tide passes to a considerable dis-

tance have wide mouths. Does the movement of the tide tend to make these mouths wider? Why?

The part of a river up and down which the tide flows is called an *estuary.* Is a place near the head of an estuary often a good location for a city? Why?

Currents. The Gulf Stream.—From the Gulf of Mexico there pours out through the Straits of Florida a great stream of warm water that continues its course northeast across the Atlantic Ocean, and on into the Arctic Ocean. This current warms and fills with moisture the winds that blow over it, and so makes the climate of western Europe and of the British Isles much more warm and cloudy than it would otherwise be. This stream is called the Gulf Stream. (26.)

Japan Current. — A similar warm current crosses the Pacific Ocean from Japan to the western coasts of North America, and has a similar influence on the climate from San Francisco northward to Bering Strait. This is called the Japan Current, or Kuro-Siwo. Find the cold currents off the coasts of North America. (26.)

What are the three movements of the waters of the ocean? How often does the tide rise? Under what conditions does it rise very high?

What influence have the tides on river mouths?

How high are the tides on the shores of islands in the middle of the ocean? Describe the Gulf Stream; the Japan Current.

16. Rainfall. (26.)

The rain falls from the clouds. The clouds contain the water that has been evaporated from the surface of the land and of the water. Because the evaporation from the ocean and lakes is greater than from the land, there is more rain on the ocean and on the land over which the ocean winds blow than elsewhere.

You have learned that the trade winds blow toward the hot belt of the earth. They sweep the clouds along to this region.

Here are the places of greatest rainfall. The islands and the eastern coasts of the continents within the hot belt are the parts of the earth having most rain.

Whenever a warm moist wind strikes high land, it is forced to rise. It therefore becomes cooler, and there is a heavy rainfall.

Think of what you have learned about the general direction of the winds in different parts of the world, and decide where there is much rainfall. Consult the rainfall map (26) to see if you are right.

REFERENCES.

TYNDALL: The Forms of Water.
TISSANDIER: Forms of Water.
TARR: Elementary Physical Geography.
COWHAM: Graphic Lessons in Geography.

17. Apparent Movements of the Sun.

The sun is never exactly over our heads in this country, but to people who live between the tropics it is overhead twice every year. At all places on the equator the sun is overhead at noon on the 21st of March. Each day thereafter it comes overhead at noon at places farther north until the 21st day of June, when it is overhead at the Tropic of Cancer. After this it goes south; that is, it is overhead at noon at places farther and farther south, and on the 22d of September it is said to cross the equator. It continues to go southward each day until the 21st day of December, when it is overhead at the Tropic of Capricorn. Then it turns and comes north again.

18. Seasons.

We live in the north temperate zone, in which there are four seasons: spring, summer, autumn, winter.

Between the tropics the sun is always nearly overhead, hence there is little difference in temperature during the year.

The equatorial rain-belt, in which the rainfall is nearly constant, shifts with the sun toward the north as the sun approaches the Tropic of Cancer, and toward the south as the sun moves to the southern tropic. As this vast belt swings across the torrid zone, it produces a wet season for the lands over which it passes. In the region it has passed is a dry season.

When is the wet season at the Tropic of Cancer? At the Tropic of Capricorn? Is the wet season near the tropics the warm season or the cool?

As this rain-belt swings across the equator twice each year, there are near the equator two wet seasons and two dry seasons each year. The wet seasons there come at the time of our spring and fall, and the dry seasons at the time of our summer and winter.

In Arctic and Antarctic regions, spring and autumn are extremely short, and there are in effect but two seasons, — a long, cold winter and a short, dry summer; and, of course, this is nearly true of the colder portions of the temperate zones. Thus it is only in the middle portions of the temperate zones that four distinct seasons are to be found.

REVIEW QUESTIONS.

Describe the apparent motions of the sun northward and southward.

Do the seasons of the torrid zone differ mainly in respect to heat or to moisture? Is this true as to the seasons of the place where you live?

What parts of the earth have four seasons? What have two seasons? What can you say of the seasons in countries near the equator?

We have our summer when the sun is farthest north, and people south of the equator have their summer when the sun is farthest south. In what months is it summer in the south temperate zone? In what months is it winter in the south temperate zone?

REFERENCES.

STEELE: Astronomy.
CROCKER: Methods of Teaching Geography.
JACKSON: Astronomical Geography.

19. The Ice Cap.

Did you ever think what would result if the snow, which in most parts of our country falls every winter, did not all melt away each year?

Should the climate of this country grow colder so that the snow of each winter melted away in the summer only on the lower plains and in the broad valleys, while upon the hills and mountains it melted only in part, then upon the uplands the snow would grow deeper and deeper year after year.

As the ice and snow accumulated upon the mountains, great masses would sometimes break away and roll or slide down into the valleys below. Such falling masses of snow and ice are called avalanches.

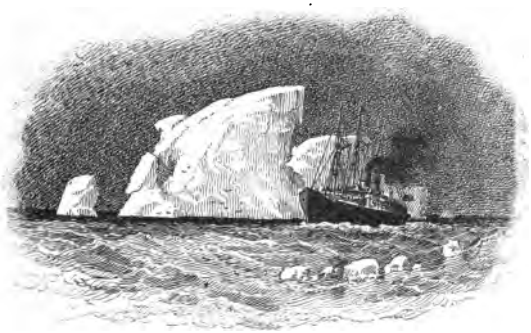
Muir Glacier, Alaska.

Should the climate of this country grow cold enough, the melted snow, which in warm days ran into the valleys, would freeze into long ice rivers called glaciers.

Such ice rivers expand in the daytime by the warmth of the sun, and hence lengthen out, or stretch themselves down the valley. As they contract at night, the upper part of the river is pulled downward. The weight of the great ice river drags it down the slope. As it moves along, rocks fall upon it from the sides of the mountains, and some of these rocks work downward through the cracks in the ice until they come to the bottom. After a while the bottom of the ice river is set with rocks, so that it becomes rough like an immense file, scraping along a foot or two a day, sometimes much faster, year after

year. Think what a tremendous pressure there is on this file from the weight of the ice, hundreds and perhaps thousands of feet thick above it. The rocks beneath such a great file are partly broken into boulders. Some of these boulders are broken into pebbles, and a great part of the pebbles are ground into sand, and all are mingled together and moved on toward the lower end of the glacier. In this way all the soils containing rounded stones and boulders have been made.

Switzerland, Norway, Sweden, and Alaska are countries whose climate is not warm enough to melt the annual snow-



An Iceberg from Greenland.

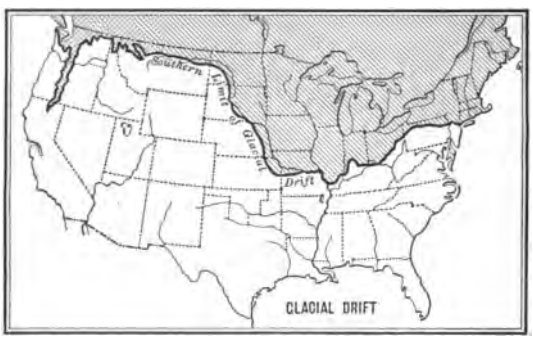
fall upon the mountains. These are the lands of the glacier and the avalanche. (83; 126; 127.)

If the climate of our country should become colder than we have supposed, so that in the lower valleys and on the broad plains only a part of the snow and ice of the winter should melt each summer, then the rivers and lakes would be covered with ice and snow, and the waters would flow beneath or cease to flow, because frozen solid.

Still it would be warmer in the lower levels than upon the mountains, and the avalanches and the glaciers would carry the snow downward as before, until the valleys became filled

and the whole country covered with a great ice field. Can you imagine the desolation of such an ice field?

It would be colder inland than near the sea. The snow would, therefore, accumulate faster inland than at the shores, making the surface slope downward toward the sea. From the center the great ice cap would work outward toward the sea and break off in icebergs. Greenland is such a land at the present time. In the short, hot summer season its great ice sheet is full of cracks and crevices, and streams of water flow into these crevices and under the ice to the ocean.



Geologists think that an ice cap, like the Greenland ice fields but much thicker, originated in the Laurentian Highland and the Rocky Mountains, and once covered Canada, the Great Lakes, and the northern part of the United States about as far south as the Ohio and Missouri Rivers. The low mountains forming the divide between the St. Lawrence and Hudson Bay are sometimes called the Laurentian Highland. The line which marks what is supposed to have been the point of farthest extension of this ice field is shown upon the map. This line is called the drift line. Along this line in a belt many miles in width are found rounded gravel hills, long banks of earth, and undrained hollows, usually of small size.

20. Drift.

North of the drift line are many lakes; south of it, very few. North of this line the streams flow in irregular courses; south of it, they descend over slopes becoming more and more gentle from the sources to the mouths of the streams.

Soil formed from the rock beneath it has about the same slopes as the rock on which it lies. Soil carried by water to its present place has a gentle slope in the direction of the current that carried it. Soil brought to its present place by ice lies in knolls or small hills and in uneven valleys or hollows.

In drift soil there are large stones or boulders; in alluvial soil there is nothing larger than gravel or pebbles.

The Mississippi valley contains alluvial soil of great depth, formed when this region was under water. See page 346. This soil was but little changed by the ice cap that once covered the northern portion of it. In the northern Appalachian region the effects of the ice cap are most apparent.

Most of the small lakes of the northern part of the United States and of Europe were formed by the action of the ice cap once covering these regions.

Where only may we expect to find good market gardens north of the "drift line"? In what part of the country may we expect to find walls of stone built for fences?

What part of the land covered by drift has lakes, not mountains, north of it? Does this make a difference in the stoniness of the soil?

REFERENCES.

CROLL: Climate and Time.
WRIGHT: Man and the Glacial Period.
GEIKIE: The Great Ice Age.
GEIKIE: The Scenery of Scotland.
GILBERT: Lake Bonneville.
RUSSELL: Existing Glaciers of the United States, Fifth Rep. Geol. Sur.
CHAUTAUQUAN, Jan., 1890: The Action of Glaciers.
HARPER'S MAGAZINE, Sept., 1894: The Ice Age about New York.

21. Plant Life. (26.)

On page 9 of Part II. is a map which shows you where certain plants originated. As you study each plant named on this and other pages, turn to that map and learn where its native home is.

Plants require a good soil with sufficient warmth and moisture in order to thrive well. The regions of the earth toward the poles are too cold for vegetation. The regions that have sufficient warmth are often too dry for vegetation. Hence only certain favored regions are well adapted to support valuable kinds of plants. Most of these regions have been occupied on that account by a strong and vigorous people.

Palm and Spruce.

The nature of the soil may favor the growth of certain kinds of vegetation in preference to others.

In southern Russia there is a striking example of this. North of the Black Sea the soil, made of mould, is covered with forests or produces excellent grains. In the neighborhood of the Volga in the southeast, the earth, sandy and salt, is covered only with a kind of short and tough herb.

The trees of the different zones vary greatly in shape and appearance. The palm trees of the tropics have long, bare, elastic trunks that bend unharmed before hurricanes which would tear a tough oak or pine tree out by its roots. The wide-spreading tops of the palm trees with their immense leaves

would be crushed and broken by the weight of snow, if they grew in the northern part of our country; but the snow falls off quickly from the conical spruce trees of the north with their drooping branches and needle-like leaves.

22. Tropical Vegetation.

1. **Tropical Forests.** — In the tropical regions of Central America, South America, Africa, India, Malaysia, and northern Australia, there are luxuriant forests with immense trees along the shores of the seas, the borders of the rivers, and the lower slopes of the mountains. (26; 79.)

These trees are green throughout the year, for the new leaves grow before the old ones fall.

The branches of these trees begin far up on the trunks, for the trees grow so close together that their boughs form a network through which but little light passes, and the leaves are forced to seek the light above. These leaves are large, glossy, and of rich color. Beneath this tapestry of foliage gigantic vines usually twine around the tree-trunks and pass from branch to branch, and with the dense undergrowth render travel almost impossible.

Many varieties of trees flourish in these forests. Palms are the characteristic trees, and are found in very great diversity. (108. 6.)

There grow the cocoa tree, the banana tree with its sheathed trunk and long, oval leaves, the bamboo tree consisting of successive, hollow cylinders, the mangrove, the mahogany, the rosewood, and the teak. The fern, which in our country is only a low plant, there becomes a large tree. (138. 8; 79.)

2. **Savannas.** — In the dry, but not arid, portions of the torrid zone savannas take the place of forests. These are plains where a part of the year it is quite dry and at another season moist. Vegetation on these plains is less thick than

in the forest regions. The plains covered with tall grass are more open. The trees grow singly or in thickets, and have large trunks with roots striking deep to get moisture. The leaves are small, that the evaporation may be slight.

The Yucca.

Savannas quite dry, like those of Mexico, central Africa, central India, bear characteristic shrubs. The cacti are usually trunks without branches, bristling with prickles. The long leaves of the aloes and the agaves contain abundant sap to sustain the trees through periods of drought. The yuccas have pointed, bristling leaves. (105. 5, 9.)

3. **Tropical Deserts.** — In the tropics, far from the sea, or where mountains keep off the rain, there are regions where the sun is always scorching and the atmosphere dry. No vegetation grows on the bare rocks and shifting sands, except where subterranean waters, flowing near the surface, moisten the earth, making fertile places, or oases, bearing date palms. (26; 149. 4.)

Gathering Dates in Ceylon

4. **Food Plants.** — The food plants of tropical regions are dates, bananas, breadfruit, coffee, cocoa, spices, sugar-cane, rice. Cotton is also cultivated in these regions. (27; 79; 95. 8; 94. 11; 108. 11, 12.)

23. Subtropical Vegetation.

Forests. — Farther away from the equator, or up the mountain sides in the tropics where the climate is subtropical, there is found a different vegetation. Some of the trees are like those found in tropical regions, but they are smaller in size; and along with them are magnolias, olives, gigantic pines, sequoias and cedars, myrtles and oleanders, orange and fig trees.

California, Chile, the basin of the Mediterranean, China, and Japan have this kind of forest growths. Do these countries have much the same climate?

Food Plants. — The food plants of subtropical and warm temperate regions are corn, rice, sugar-cane, tea, cocoanuts, olives, oranges, lemons, figs, pineapples, plums, peaches, grapes. Tobacco is also cultivated. (27; 93. 10, 11.)

24. Vegetation of Temperate Zones.

Forests. — Farther north, the cold of winter causes an entirely different tree growth from that of the tropics. This is the case in the greater portion of the United States, central and western Europe, southern Africa, and the Pacific islands in the south temperate zone.

Most of the trees are deciduous; their leaves, small and of a tender green, fall in autumn at the approach of cold weather, to reappear with the warmth of returning spring. Here grow the oak, ash, chestnut, walnut, maple, beech, elm. (26.)

Food Plants. — The food plants of the cool temperate region are corn, wheat, potatoes, rye, barley, oats, apples, pears, grapes. (27.)

25. Vegetation of Polar Regions.

What have you learned about the temperature near the Arctic Circle? In favored situations on the western coasts of

America and of Europe, are forests of fir trees, birch, and aspen; but away from the warm, moist, west winds, in the dry and cold interiors, the tree life dwindles into shrubs. The growth of plants during the short summer season is wonderfully rapid in the polar regions. (26; 83. 6.)

REVIEW QUESTIONS.

Find on the map and globe the tropical forest regions of the earth. Why are these regions adapted to produce dense forests? Do the leaves fall in these forests?

Find the part of the world in which you live. What trees grow in this part of the country? How many of them do you know?

What are savannas? Where are they found?

REFERENCES.

TARR: Elementary Physical Geography.
CHISHOLM: Handbook of Commercial Geography.
FIGUIER: The Vegetable World.
TILDEN: A Commercial Geography.

26. Distribution of Animals.

Study the map on the opposite page, and notice the limits of each of the six regions into which the earth is there divided. Each of these regions has some kinds of animals which are not found in all the other regions.

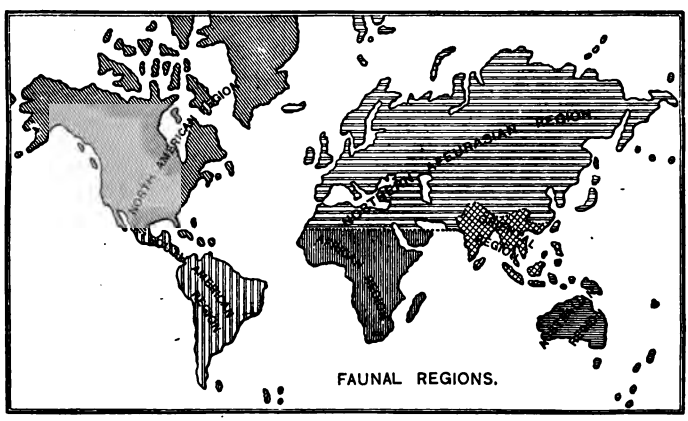
The North American Region. — In the far northern part of this continent are found the polar bear and musk ox and reindeer, but the larger part of the animal life is in the sea. There the seal, walrus, and whale live. In the rivers somewhat farther south are otters and beavers, and on the land are animals clothed in thick fur, as the martens, ermines, raccoons, minks, and squirrels. (86. 8, 10, 12.)

Among the large wild animals of North America are the bisons, often called the buffaloes, which once roamed over the

central plain but are now diminished to only a few small herds; the elk or moose deer of British America; the black bear; the grizzly bear, — the strongest and fiercest of bears, — found only in the western highlands; the wolf, fox, panther, and lynx.

In the inhabited portion of North America wild animals have disappeared with the clearing of the forests, and domestic animals, such as horses, cattle, sheep, and swine have been introduced.

Turtles, toads, and frogs are found everywhere, and in the rivers of the South alligators are abundant.



FAUNAL REGIONS.

There are about seven hundred species of birds. How many can you name?

Northern Afeurasian Region. — What are the southern limits of this region? For an explanation of the word Afeurasia, see page 191.

Here the animals are like those of North America, except that the bison, grizzly bear, musk ox, raccoon, and prairie-dog are not found. Instead are found musk deer, wild goats and sheep, the chamois and ibex of the Alps, the

wild ass, wild boar, wild two-humped camel and wild yak of central Asia, and the camel of the Sahara Desert.

South American Region. — This region includes also Central America and a part of Mexico. Here there is a greater variety of animals than in any other region, as well as a greater number of kinds found nowhere else.

The jaguar, which somewhat resembles the tiger, is the fiercest animal. Pumas or American lions, tapirs, peccaries or wild hogs, armadillos, ant-eaters, and long-tailed monkeys are very numerous. The llama, the alpaca, and the vicuña of the Andes are valuable for their long, silky wool; these animals as well as the guanaco of the plains have been domesticated by the native Indians and are used as beasts of burden.

Immense herds of horses, cattle, and sheep are reared.

Serpents, lizards, and alligators thrive in this region, and insects of most brilliant hue, magnificent beetles and butterflies surpass those of other regions.

The rhea, or American ostrich, is the largest of the birds. The largest flying bird in the world, the condor, lives in the Andes Mountains. Most of the birds are strikingly beautiful. Humming birds, which are found only in the western hemisphere, exist in great variety in South America.

The African Region. — Among the animals of the African region are very few of the kinds found in the Afeurasian region.

The swift-footed and curiously striped zebra and quagga, the huge hippopotamus, the giraffe, — the tallest of animals, — are peculiar to Africa. The lemur is not found in Africa, but is confined to the island of Madagascar.

The elephant and rhinoceros are found throughout tropical Africa, and also in the oriental region, but they differ in species in the two regions.

Herds of antelopes frequent the plains and deserts.

The flesh-eating animals are the African lion, the leopard, the panther, the hyena, and the jackal. Apes, gorillas, —

manlike in structure and of great ferocity, — chimpanzees, and baboons are very common.

The colonists have introduced the domesticated animals of Europe and America.

The crocodile lives in the Nile and other rivers. There are huge pythons in some of the tropical forests. Centipedes, scorpions, and other poisonous creatures endanger human life, and the bite of the tsetse fly, which is found in southeastern Africa, is deadly to horses, cattle, and sheep.

The ostrich is a native of Africa. Some of the birds have brilliant plumage, among them being the many kinds of parrots, the ibis, and the flamingo. (148. 1, 14.)

The Oriental Region. — To this region belong the bears, foxes, and deer of the Afeurasian region; lions, leopards, rhinoceroses, and elephants nearly like those of the African region; lemurs resembling those of Madagascar; and tapirs resembling those of South America. The tiger is found mainly in this region, and Borneo is the home of the orang-outang, which of all the monkey tribe most resembles man. Crocodiles and snakes, squirrels, mice, bats, parrots, peacocks, and pheasants live here in large numbers.

Tamed elephants, camels, yaks, and buffaloes are useful beasts of burden. (136. 11; 137. 3; 138. 7; 139. 10; 142. 13.)

The Australian Region. — The emigration of land animals from the other continents to Australia has been prevented by the deep seas which surround this island continent, and its animal life, like its vegetation, differs from that elsewhere. Here, and on the adjacent islands, are the marsupials, those animals which have a pouch in which their young are carried. The kangaroo is the most interesting of this class. The opossum of America is the only marsupial outside of this region. The echidna, a quill-covered animal that lies torpid in the winter like a reptile and feeds on insects in summer, and the duck-bill, a little, hairy quadruped having webbed

feet and a broad bill like a duck, are singular animals. Nearly the only beasts of prey are the dingo, a kind of wild dog, and the Tasmanian wolf. Reptiles are numerous and venomous.

There are many peculiar birds in Australia, among them the apteryx, a bird about as large as a hen, with feathers that look like hair; and parrots and cockatoos which are unlike those found elsewhere. Nowhere else are there birds having such gorgeous plumage as the lyre-birds and the various kinds of birds of paradise have.

REVIEW QUESTIONS.

What illustration can you give of animal life depending on climate and vegetation?

Name the six regions of the world having in all parts nearly the same animals, but differing from the other regions.

Name the more important animals of each region.

REFERENCES.

McLaughlin Brothers: Little Folks' Menagerie.
Beddard: Zoogeography.
Cowham: Graphic Lessons in Geography.

27. Vegetable and Animal Life of the Ocean.

The vegetable life of the ocean is limited to the algæ or seaweeds. These are flowerless plants, as are the lichens, mosses, ferns, and mushrooms that grow on land. In mid-ocean these seaweeds have long stems and pale leaves. In the Sargasso Seas, though, where the heat is greater and the water is shallower the seaweeds have brown or green ribbon-like leaves, sometimes two hundred yards in length. Find the Sargasso Seas. (26; 153. 5.)

Animals live in the ocean at all depths, and they are of various sizes, from the minute creatures that can be seen only under a powerful microscope to the gigantic whale, sometimes eighty feet in length.

Not all parts of the sea are green or blue. In some parts the waves appear perfectly black; in places off the coast of Africa they are white; the Red Sea receives its name from the color of its water. These different colors are usually due to the presence of immense numbers of microscopic animals which give their color to the water. Sometimes these tiny creatures glow like fire when they are stirred by a passing vessel. The water is then said to be phosphorescent.

Sea-Anemones.

The bottom of the ocean is often very gay, with its branching corals, brilliant sponges, violet and crimson jelly fishes, and the bright sea-anemones. Although these sea-anemones are called the ocean flowers, yet they belong to a low order of animal life. They grow on stalks attached to rocks, but they can move very slowly. If touched, they lose their brilliant colors and shrink to an ugly, jelly-like mass.

Coral Sponge.

The sponges which we use are the skeletons of animals. They grow on rocks on the ocean bed, and the best ones are cut off by divers. Cheaper qualities are dragged up by tongs or rakes somewhat like those used in oyster fishing.

Most of the best sponges come from the eastern part of the Mediterranean. The quality of the sponges from the West Indies is not so good.

Other animals of the sea are mollusks, soft-shell animals like the devil-fish, and jointed animals like the lobster. Of the back-boned animals there are fishes, reptiles, birds, and mammals. The sharks are the largest of the fishes,

some kinds being thirty feet or more in length. There are no frog-like animals in the ocean. The largest animals of the sea are the seals and walruses, the porpoises and whales.

The birds of the sea equal in number those of the land. Every rock and cliff, every uninhabited island, swarms with them. The albatross, the petrel, the gull, and others spend most of their time at sea, rarely visiting the land.

The albatross, called the monarch of the sea, is about the size of the condor, and is the largest sea-bird. Its home is the western Pacific and the southern oceans.

REFERENCES.

TARR: Elementary Physical Geography.
SHALER: Land and Sea.
COSMOPOLITAN, October, 1893.

28. Progress of Mankind.

Three degrees of progress can be noticed among the peoples of the earth: first, that of savage life; second, that of barbarous life; third, that of civilized life.

1. Savage life is that of a people who have little intelligence; whose food is wild game, fish or fruits which the earth produces without cultivation; whose homes are in caves or in rude temporary huts.

2. Barbarous life is a step in advance of savage life. It is the life of a people who obtain from herds of animals milk and meat for nourishment and wool for clothing; who are joined into tribes under a ruling chief; and who, like the Arabs in Asia, wander from place to place in search of pasturage for their herds.

3. Civilized life is characterized by fixed homes. It is the life of intelligent, prosperous, and cultivated people.

History tells us that the progress of peoples has been through the lower stages to the highest one. The peoples now the most rude and ignorant have not left the first stage.

29. Races of Men.

There are three chief types, or races of men: the white, or Caucasian; the black, or Ethiopian; and the yellow, or Mongolian. Although there is great diversity among those belonging to each race, yet the races are very distinct one from another. (23.)

The people of the white race are distinguished by their white color, whether of darker or lighter shade, wavy hair, and narrow nose; those of the black race by their black color, crinkled hair, and broad nose; those of the yellow race by their yellow color, straight hair, and medium-sized nose.

Look at the pictures of people of the black race. (8. 38-45; 148; 149; 150.) What can you say as to their skull, mouth, lips? Study the appearance of the people of the yellow race. (8. 26, 27, 28; 83; 123; 140; 141; 144.) What can you say as to their skull, face, cheek-bones, and eyes? Then examine the representatives of the white race (8. 1-16, 11-16; 115-132), and see how different all are from those of the yellow and black races.

On the map (23) two other smaller races are included in the yellow race. These two, the brown race and the red race, differ, as their names imply, from the yellow race chiefly in color. The greater part of the people of these two races are savages. The most cultivated of the brown race are the Javanese (142), and of the red race the Indians of Indian Territory and of Mexico. (8. 48; 99. 5; 95. 1, 3.) From the pictures and the text write as full a description as you can of each of the three chief races. Where are the people of the white race found? The people of the yellow race? The black race? The brown race? The red race?

REFERENCES.

PESCHEL: Races of Men and their Geographical Distribution.
TYLOR: Anthropology.
BRINTON: Races and Peoples.

30. Occupations.

"The whole wealth of the world has been created by the union of human industry with the materials which God had originally spread around us." — DR. WAYLAND.

Those who gather the materials of wealth obtain them from the land or the sea; from the land by farming and mining, from the sea by fishing.

Food, clothing, and shelter are necessities for all people. The savage is content with irregular supplies of food, scanty and untidy clothing, and houses that have very few comforts in them. But as man grows more civilized his wants increase. He plans for future needs; refinements and luxuries become attractive to him. For these he must labor. All these things come to every one of us only because some one has labored for them.

Getting out the Ore.

The chief industry of civilized men is *agriculture.* Raising crops, cattle-raising, and gardening are forms of agriculture.

Mining is another great industry. From the mines come our coal and iron, gold and silver, copper and lead.

Manufacturing employs many people.

Fishing is in some places an important industry.

Lumbering is the industry which provides us with lumber, timber, and wood.

Transportation, which is carrying goods or people from one place to another, furnishes employment for many people.

Commerce, or buying and selling goods, is a source of wealth and comfort. The more wealthy and the more civilized a nation, the greater the amount of commerce it carries on.

A man who buys and sells goods is a trader or merchant. We say he is engaged in trade and handles merchandise. If he buys or sells the goods or merchandise made in his own country, he is in domestic trade or commerce. If he buys or sells goods abroad, he is in foreign trade. If he sends goods out of the country to sell, he exports them. If he brings in goods from other countries, he imports them. *Exporting* and *importing* are the two forms of foreign commerce.

A Lumber Camp, near the Aroostook, Maine.

31. Government.

If people live together, they must have regulations which will prevent them from molesting one another. There must be some one to protect the weak and restrain wrong-doers. Whatever is done to provide for the common welfare, whether it be to make roads for travel or to provide for defense against other people, some one must plan and direct the work.

The people of a savage or of a barbarous tribe are ruled by one man, a chief, who is chosen for his great strength and courage, for he must lead them in their wars.

Civilized nations need other qualities than these in their rulers. Laws must be made and enforced, and many officers are needed to carry on the government.

Countries in which the people have a right to select their own rulers are called **Republics.** The United States is a republic.

A Monarchy is a nation whose chief ruler, instead of being chosen by the people, succeeds to power because his father or other near relative ruled before him. England, Germany, Spain, Turkey, Russia, China, Japan, are monarchies. What is the title of the monarch in each of these countries?

An Absolute Monarchy is one in which the ruler has full power. Russia, Turkey, and Persia are absolute monarchies.

A Limited Monarchy is one in which the power of the ruler is limited by laws, and in which a body of men is chosen to share in making the laws. Great Britain and Germany are limited monarchies.

32. Religion. (23.)

The people of all nations and tribes have something that they worship. Savages worship such objects as idols, or the sun, or fire, or sacred animals. They are much troubled by the fear of evil spirits that may do them harm, and they try by prayers and gifts to prevent this. Such people are called *pagans*. A large part of the black race and the red race are pagans.

Most of the people of the yellow race are Brahmanists or Buddhists.

Brahmanists are divided into four castes. See page 270. Their chief religious duties are to live according to the rules of their own caste and to keep themselves separate from other castes.

The *Buddhists* are the followers of Buddha, a prince of India, who taught a new faith about 500 B.C. Buddhism is the prevailing religion in northern, central, and eastern Asia, including China and Japan.

Those who believe in one God are the *Jews*, whose sacred book is the Old Testament; the *Christians*, who accept both the Old Testament and the New; and the *Mohammedans*, who revere Mohammed as a great prophet. The Koran, written by Mohammed, is the Bible of the Mohammedans.

The leading nations of the world are of the Christian faith.

NORTH AMERICA.

33. Extent and Relief. (9; 10; 11.)

On which continent do we live? In what part of it?

Between what oceans does this continent lie? What is its northern latitude? Its southern? What gulf is on the south? What is the latitude of the northern shore of this gulf?

Connect Cape Lisburne near Bering Strait and Cape Race on the Island of Newfoundland by straight lines. Connect each of them with the Isthmus of Tehuantepec. Which is the longest and which is the shortest line? What large bay is cut by one of these lines, and what large gulf by another? With what shores are these lines nearly parallel? With what systems of mountains are two of them nearly parallel?

If you draw a straight line from Cape Hatteras on the Atlantic coast to Cape Barrow on the Arctic coast, what large lakes lie on or near the line? What great river flows nearly parallel with such line?

Draw a meridian through the most eastern point of the United States; one through the most western point, Cape Flattery; and one through the most western of the Aleutian Islands. Is the eastern or the western meridian farther from the central one? How many degrees of longitude are included between the eastern and the western of these meridians?

What parts of North America approach nearest the Old World on the east? On the west? What is the parallel at the point where North America and South America join?

Name and locate five peninsulas of North America. Name three mountain systems of North America, and describe each as to location, extent, and elevation. State the extent of the central plain. What basin lies between the two divisions of the eastern highland?

In what directions does the Rocky Mountain system extend? Where does it begin and where does it end?

This system extends from the basin of the Yukon to Cape Horn. It is

called the Rocky Mountain system in its northern part, the Cordilleras in Mexico and Central America, and the Andes in South America.

What difference in the direction, or trend, of the Appalachian Mountains and the Laurentian?

REFERENCES.

SHALER: The Story of Our Continent.
STANFORD: Compendium of Geography and Travel.
GRENFELL: Vikings of To-day. (Labrador.)

34. Rivers of North America.

Rivers of the Arctic and Hudson Basins. — The Mackenzie River is the only large river of North America flowing into the Arctic Ocean. Its valley, which seems to be a prolongation northward of the valley of the Mississippi, is well marked on the west but of indefinite extent on the east.

The Mackenzie next to the St. Lawrence is the largest lake-fed river of America.

The Nelson is the important river of the Hudson Bay system; its source is in Lake Winnipeg, a noted lake as large as Lake Ontario. To this lake the Saskatchewan carries the waters from a portion of the Rocky Mountains. The Red River of the North carries to the Nelson the waters of northwestern Minnesota and a portion of North Dakota.

St. Lawrence and Atlantic Basins. — The St. Lawrence drains more large lakes than any other river of the world drains. The boundary of its basin is quite distinct on the northern side, but on the south there is only a slight divide separating its waters from those of the Mississippi and the Atlantic systems.

The St. Lawrence is remarkable for the clearness and purity of its waters; it, therefore, has no delta at its mouth. Though this river bears the name of St. Lawrence only from Lake Ontario to the Gulf of St. Lawrence, yet it may be considered as rising in Lake Superior and descending to the sea by a series of falls or rapids, with long level intervals between them. Point out the places of descent; the places nearly level.

Mississippi River. — The great river of the central plain is the Mississippi. Because of its extent, the abundant and varied products of its drainage basin, and the facilities for water transportation which it affords, this is the most important river of the world.

Drainage of the Western Slope. — The Pacific Highlands extend northward to the basin of the Yukon River, which drains the area between the Alaskan Mountains and the Arctic Ocean. The basin of the Yukon is about one thousand feet above the level of the sea. Next south comes the basin of the Fraser River, which empties into the Gulf of Georgia near the southern boundary of Canada.

The Gulf of Georgia is the body of water between Vancouver Island and the American continent. It connects with the Pacific Ocean on the north by Queen Charlotte's Sound, and on the south by the Strait of Juan de Fuca.

Just south of this in the United States is the much larger basin of the Columbia River. Here the land is about two thousand feet in average elevation. This elevation occasions great falls in the Columbia where it passes the Cascade range.

South of the Columbia lies the Great Interior Basin, whose rivers flow into Salt Lake and smaller lakes. This basin is about four thousand feet high in the northern part, but lower toward the south. What do you understand by an *interior basin*?

Still farther south is the long, narrow basin of the Colorado River, which discharges its waters through the Grand Canyon of the Colorado into the Gulf of California.

East and south of this lies the basin of the Rio Grande, which has its outlet in the Gulf of Mexico.

There is a small and very elevated basin in which is the City of Mexico. This is about eight thousand feet above the level of the sea, and is an interior basin like that of Great Salt Lake.

35. Climate of North America.

In North America there are three belts of climate extending from east to west.

The *northern belt* includes Greenland, most of British America, and all of Alaska except the extreme southern point. The *middle belt* includes southern Canada, a part of Alaska, and most of the United States. The *southern belt* includes Mexico, Central America, Florida, and the West Indies. See map of Isotherms. (26.)

REVIEW QUESTIONS.

Name the great river of the Arctic basin.

Name the great river of the Hudson Bay basin and its two chief tributaries. Contrast the St. Lawrence and the Mississippi in respect to deltas.

Name the rivers and straits connecting the Great Lakes.

Name four chief river basins whose waters enter the Pacific. Tell the location of each. Between which of them is the great interior basin?

There are four basins in the western part of North America that are stated to be respectively 8000, 6000, 2000, and 1000 feet in elevation. What are they? In what order as to elevation do they come?

REFERENCES.

GANNETT: The Building of a Nation.

GREELY: American Weather.

HARRINGTON: Rainfall and Snow of the United States. (Bulletin C, Weather Bureau, 1894.)

WHITNEY: The United States.

PATTON: Natural Resources of the United States.

SHALER: The Story of Our Continent.

TARR: Elementary Physical Geography.

FISKE: The Discovery of America.

BROOKS: United States.

BAEDEKER: The United States.

RECLUS: The Earth and its Inhabitants, Vol. 2.

THE UNITED STATES.

36. Position and Extent. (10; 11; 12–13.)

THE United States is one of the largest and most important countries in the world.

Excepting Alaska, it is wholly within the north temperate zone, the zone in which all the great nations of the world live. It has a large extent and a great variety of surface, soil, climate, and products.

What part of North America is occupied by the United States? Between what oceans does it lie? Between what lakes and gulf?

Its length from east to west, exclusive of Alaska, is nearly three thousand miles, and its width is about sixteen hundred miles. Its area without Alaska is over three million square miles; with Alaska, three and one-half millions.

What meridian passes through Eastport, Maine? Can you tell why Eastport was so named? What is the longitude of Washington? Of the Mississippi River? Of the Pacific coast of the United States?

The parallel of 49° north latitude, which forms a part of the northern boundary of the United States, is nearly the latitude of Paris in France.

The forty-fifth parallel forms what part of the boundary of the United States? What country in Europe does it cross? What in Asia?

The parallel of 36° 30′ north latitude separates the middle and central from the southern states, and also separates Europe from Africa.

37. Physical Features.

The United States includes five great regions, differing in slope and elevation. These in order, from east to west, are the Atlantic slope, the Appalachian highlands, the Mississippi valley, the western highlands, and the Pacific slope. Trace all these upon the map of the United States as you read the descriptions.

The Atlantic slope lies between the Appalachian Mountains and the Atlantic Ocean. This slope is but a few miles wide in the north; it becomes wider toward the south, so that at the point where it joins the plain of the Gulf it has a width of about three hundred miles.

The Appalachian Mountains consist of several parallel ridges, having altogether a breadth of about one hundred miles, including the long valleys between the ranges. Some of the valleys are of remarkable fertility, and others are stony and unproductive. The highest points of the Appalachians are in North Carolina and in New Hampshire. In the latter state they are called White Mountains.

The western mountain system of the United States consists of many ranges, running nearly north and south. The Coast Range, the Sierra Nevada, the Cascade Mountains, and the Rocky Mountains extend over about one thousand miles, enclosing elevated plateaus of very arid lands. This system is widest at about the latitude of forty degrees.

The term Rocky Mountains is sometimes used to denote all the mountain chains between the Plains and the Pacific Ocean; but strictly it applies only to the most eastern of these ranges.

The plateaus between these ranges are broken by smaller ranges, extending mostly in the same direction as the main ranges.

West of the Sierra Nevada and Cascade Mountains is the *Pacific slope.*

Between the Rocky Mountains on the west and the Appalachians on the east is the *Great Central Plain*, or Basin of the Mississippi, containing more than two-fifths of the territory and more than half of the population of the United States.

38. Drainage.

The Atlantic slope is well watered. Numerous small rivers rush rapidly down this slope to the Atlantic Ocean. What is their general course? At what place in these streams are rapids found?

The most important rivers of this slope are the Connecticut, the Hudson, the Delaware, the Susquehanna, and the Potomac.

The Central Plain is drained chiefly by the Mississippi. This is the largest river in North America, and is about 2900 miles long. The chief tributaries of the Mississippi are the Ohio on the east, and the Red, the Arkansas, and the Missouri on the west.

The Mississippi rises in the central part of Minnesota, in Itasca Lake, or in some feeders of this lake.

Its first course is through a swampy land dotted with lakes. At Minneapolis are the Falls of St. Anthony. The head of steamboat navigation is at St. Paul. From the Missouri to the Gulf, the river winds through "bottom lands" from thirty to seventy miles in width. Bottom lands are low lands formed by alluvial deposits along a river. These lands are exceedingly fertile, but on account of the annual spring overflow are but little cultivated. Where the river strikes the bluff on either side of the bottom lands, there a city has generally sprung up. Find several such cities.

The Missouri is the principal tributary of the Mississippi. It rises in Montana near the head waters of the Columbia and Colorado Rivers; and enters the Mississippi about twenty miles above St. Louis.

The river that rises in the Rocky Mountains under the name of the Missouri (Muddy River), and empties into the Gulf of Mexico under the name of the Mississippi (Great River) is the longest in the world. It is about 4200 miles long.

What are the principal rivers of the Pacific slope?

REFERENCES.

GANNETT: The Building of a Nation.
SHALER: The Story of our Continent.

39. Climate.

The varied relief of the United States and its extent through twenty-five degrees of latitude give it every variety of the climates of the temperate zone. The average temperature, which is but 40° in Maine, attains 70° in Florida and Louisiana. No less great is the contrast in temperature between the eastern and the western portions of the United States.

What part of the United States has a tropical climate? What part has a warm temperate climate? What part has a cool temperate climate? What part has an arctic climate? (26.)

The average temperature is lower than that of the same latitudes in Europe and Africa, but higher than in Asia.

The climate of the interior is continental, and is characterized by extreme heat in summer, great cold in winter, and rapid changes from season to season. Spring is a short season, while autumn is more prolonged and in the northern states ends in an "Indian Summer."

Blizzards and snowstorms are frequent in the winter season on the plains, and among the peaks of the western highlands. The summers are hot and scorching. The days are much warmer than the nights.

In the northeastern part of the United States the extremes

are great, and the thermometer often falls to forty degrees below zero during the winter season, and reaches one hundred degrees above zero in the hottest days of the summer.

In the great central plain there are no highlands to prevent the full sweep of the winds from the south to the north, and from the north to the south; and, during the winter, ice often forms for a day even on the coasts of the Gulf of Mexico.

The coasts of the Pacific are an exception to the extreme character of the climate of most of the remainder of the United States. Being shut off from the cold winds of the north and east, and exposed to the winds from the Pacific, these coasts have a maritime climate. The winters are mild and the summers cool.

The temperature of the region east of the Rocky Mountains changes with great regularity from the cool north to the warm south. West of the 100th meridian, the climate as to temperature does not correspond with the latitude, but in the mountain and plateau regions depends mainly upon the elevation.

The average temperature of northern New York is 44°, and of New Orleans 68°. What is the difference between these two temperatures? What is the difference of latitude? How much difference in temperature does a degree's difference in latitude make?

It is worth while to remember that in the eastern part of the United States, latitude 45° has an average temperature of 44°, and that the average temperature changes 1.6° for each degree of latitude.

Find the latitude of Florida Keys. What do you estimate the average annual temperature of this place to be? What is the average temperature of Philadelphia? Of Washington? Of Charleston?

The average temperature for the year is the same as that of part of the spring and fall; but, of course, the summers are much warmer, and the winters much colder than the year's average. The difference in temperature between the winters and the summers is greater in the northern part of the United States than in the southern.

Turn to the map of isotherms, (26), and compare the statements in this section with the map.

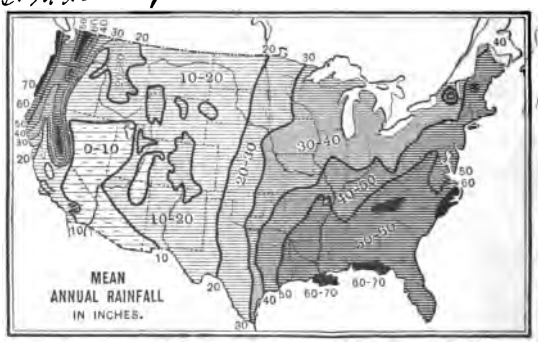
40. Winds.

The prevailing winds of the greater part of the United States are westerly. (9.)

The southern part of the United States lies, however, within the region of the autumn trade winds. What is the direction of these winds?

In general it may be said that throughout the United States the winds blow from the north more often in winter and from the south more often in summer than in other seasons of the year.

The winds of the eastern portion are variable. They are moist on the coast, but dry on the highlands of the Appalachian system.



41. Rainfall.

The sources of moisture for the different portions of the United States are the waters adjacent to them.

The United States may be divided, as to the amount of rainfall, into three sections. Two of these sections are moist, and one is dry. The first section is that along the Pacific coast extending to the Cascade Range. The dry section extends

from the Cascade Range to about 100° west longitude. From this line to the Atlantic coast is a region in which the amount of rainfall varies, but is usually sufficient for the needs of the farm crops.

The Atlantic states receive abundant showers distributed with considerable uniformity through the several seasons of the year. What change in this respect shall we find as we go westward? Southward?

The increase of rainfall on the Pacific coast is from south to north. On the Atlantic coast the increase is from north to south. The rainfall is less in the eastern part of the United States than on the Pacific coast because the prevailing winds are from the west.

The peninsula of Lower California is a desert from lack of water, but the cultivable region increases in width and moisture toward the north. Oregon, Washington, and British Columbia have a heavy rainfall and much cloudiness of sky.

Irrigating Young Orchard by Furrow Method.

Experience shows that a rainfall of at least twenty inches of water per year is necessary for the growth of crops, unless the land is irrigated. Irrigated land is land watered by causing a stream to flow upon it.

Where the rainfall is between twenty and twenty-five inches there are occasional seasons of destructive drought.

42. Peculiarities of Rainfall.

For the best growth of crops it is not needful simply that there should be in the course of the year a sufficient amount of moisture from rain and snow, but this amount must be distributed through the year, so that during the growing season

there shall be no drought nor seasons of such heavy rainfall as to delay vegetation. The rainfall in the United States is, upon the whole, average in quantity, and its distribution through the several months of the year is in most localities a fortunate one.

A supply of rain not very large will suffice for crops if it comes at the proper time; but if the rainfall occurs mostly in the late fall and winter, there may be a large amount of it during the year and yet the crops suffer from lack of moisture.

It is for this reason that though our country has a greater annual rainfall (snowfall included) than Europe, it is more subject to drought. The atmosphere of Europe is more laden with moisture than is that of the United States. For this reason the surface evaporation from the land and plants is less, and dews are more copious. In Europe, indeed, excessive summer dampness is nearly as detrimental to crops as drought is with us.

Adapted from Map by Gen. Greely.

By reference to this map, the season of the year in which rain or snow falls most copiously in different parts of the United States and adjacent countries can be told.

The sections between the several type regions have a rainfall partaking of the characteristics of the adjoining sections.

It should be noticed that this map shows the time of greatest rainfall. For amount of rainfall see page 62.

REVIEW QUESTIONS.

What part of the United States has a tropical climate? A warm temperate? A cool temperate? What part has an arctic climate? What can you say of the climate of the interior? What of the climate of the northeastern part? Would Florida oranges be safer from freezing if the Laurentian highlands extended in a high range to the Rocky Mountains?

Is the climate of the Pacific coast as extreme as that of the other four sections of the United States? What do you understand by an extreme climate? Is the climate of the southern states as extreme as that of the northern states? What are the two regions of greatest rainfall? Where is the dry or arid section?

REFERENCES.

GREELY: American Weather.

HARRINGTON: Rainfall and Snow of the United States. (Bulletin C, Weather Bureau, 1894.)

WHITNEY: The United States.

PATTON: Natural Resources of the United States.

SHALER: The Story of Our Continent.

TARR: Elementary Physical Geography.

43. Forest Regions.

The most important material used in manufacturing is wood, because of the many uses to which it can be put. Almost any kind of wood serves for fuel, but special qualities are required in the wood used in the building of houses, of railroads, of ships, and of bridges; other qualities are needed for carriage building and tool handles, and still others for carving and decorative woodwork. The wood that is used for matches or pencils cannot be used in making delicate musical instruments.

Besides wood, the forests yield many other valuable materials. From the bark of oaks, hemlocks, and other trees, and from the leaves of sumac bushes, a valuable tanning substance is obtained; from pine trees, tar and rosin, and by distillation

turpentine and other oils; while other trees yield edible fruits and material for dyes, rubber, ink, and textile fabrics.

There are three belts of forests across North America.

The United States is an exceedingly well-timbered country. It has two chief forest regions, an eastern and a western.

The Eastern Forest Region, which is the most dense and the most valuable, lies east of the 95th meridian, though within this region there is a large area of prairie land. The forests of this region extend along the Atlantic coast from Maine to Florida, and along the southern border into Texas. They extend also from Maine along the northern border of the United States, through the region bordering on the Great Lakes into Minnesota.

Hauling Logs in the Forest.

Because of the abundance of timber in the lake region furniture is manufactured in many of its cities, Chicago and Grand Rapids making the most.

West of the Alleghany Mountains large forests are also found in Tennessee, Alabama, and Kentucky, while West Virginia is especially rich in timber. Missouri and Texas have valuable forests. Many of the pines in Texas are 100 feet in height.

Arkansas and Louisiana are the two most heavily wooded states.

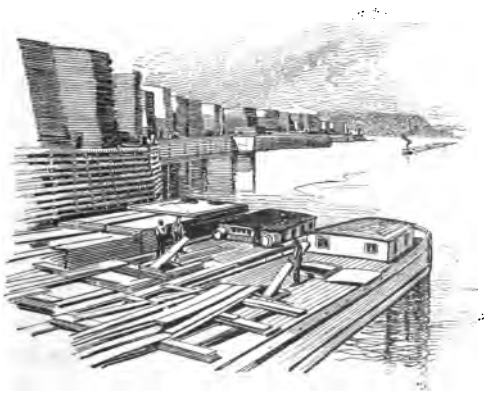
The Western Forest Region is much smaller in extent than the eastern. Beginning in California at the southern limit of the Sierra Nevada, the narrow belt of dense forests continues

along the western slope of that range and of the Cascade Range, but broadens rapidly until in the northern part of the United States and in Canada it extends from the ocean to the summits of the Rocky Mountains. In central Canada the Atlantic and Pacific forest regions unite in patches of forests broken by open prairies. The great central land of the United States between these forests was in early times, as now, untimbered land.

A Saw Mill.

The Pacific timbered land extends about a thousand miles farther north than the Atlantic. Why?

Portions of the forests in Washington and Oregon are nearly as dense as those on the banks of the Amazon.



Loading Lumber at Dock.

Peculiar to California are two species of trees which are of great size and beauty. One is called the redwood, and the other the big tree. The redwood has a fine red color, and when polished has nearly the same rich tints as rosewood. These trees grow near the coast and are

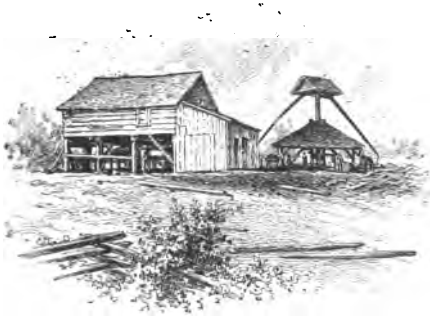
very large. The "big trees" are found in groves and are the largest trees in the world. Four of these trees are each over 300 feet high. (103. 2, 8, 11.)

Pine Forests. — There are many varieties of pine which are widely distributed over the forest areas of the United States, and which are, perhaps, the most important of all our trees. The white pine of the north, being compact yet soft and easily worked, is the wood of which houses and some kinds of furniture are commonly made. The chief states producing white pine are Maine, Michigan, Wisconsin, Minnesota, Washington, and Oregon. (97. 9; 98. 7.)

The wood of the yellow pine, a southern species, is hard and tough, and is shipped north for flooring and other uses. From the sap of this pine is made nearly all the tar, pitch, rosin, and turpentine used in this country. North Carolina, South Carolina, and Georgia have immense pine forests.

44. Agricultural Products. (27.)

As to agricultural products, there are (east of the 100th meridian) three natural divisions of the United States, the southern, the middle, and the northern. The first is the land of cotton, the second of corn, the third of wheat. The southern or cotton belt extends from the Gulf to the mouth of the Ohio. The middle or corn belt reaches north to the southern limit of the Great Lakes. The wheat belt covers the northern part of the corn belt and extends beyond it into Canada.



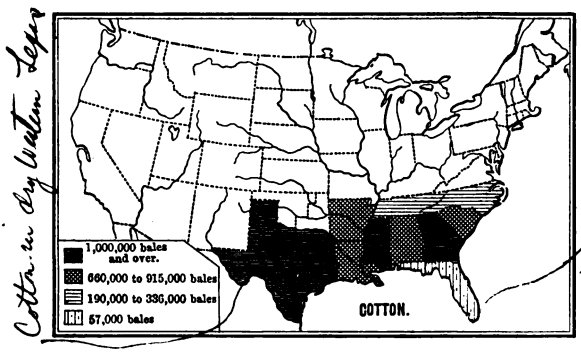
An Old Cotton Gin and Press.

It must not be overlooked that corn is extensively cultivated in the cotton belt and in the wheat belt, and that the most wheat is grown in the northern portion of the corn belt.

A Modern Steam Cotton Gin House.

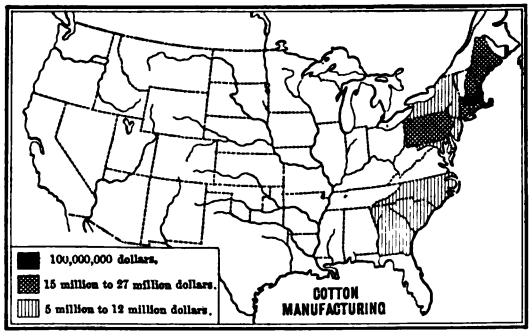
Cotton. — Cotton is a plant of the torrid and warm temperate zones. It requires a warm climate free from frost for at least half of the year, with abundant moisture while growing and little while ripening.

More cotton is produced in the United States than in any other country. India, Egypt, and Brazil also raise great quantities of cotton. The United States manufactures cotton



goods, and also exports cotton to England, where India is its chief competitor in the cotton markets. The value of the cotton export of our country is greater than that of any other export. (27.)

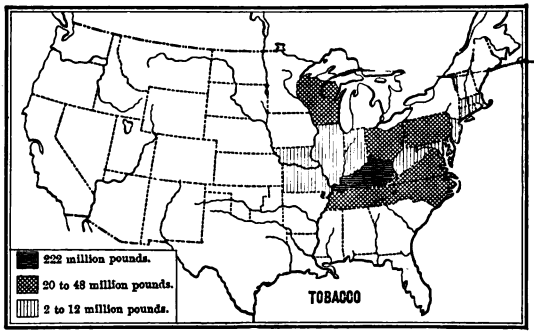
Cotton is raised in all the southern states. Which states are of the first rank in this production? Second? Third?



Which states manufacture the most cotton? Which are of second rank in this manufacture? Third? Why are the chief cotton factories in New England?

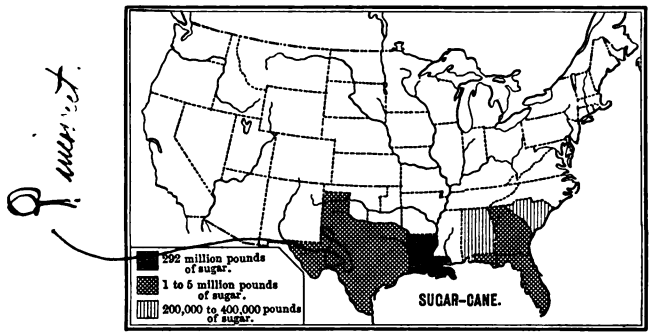
England is the greatest cotton-manufacturing country of the world, the United States the second, Germany and France next.

Tobacco. — Tobacco requires a warm climate and a suitable soil. In the United States more tobacco is produced than in any other country. Its range lies north of the cotton belt.



Kentucky produces nearly half of the tobacco raised here. What states are of second rank in its production? Third?

Other countries producing large amounts are chiefly tropical or subtropical. Cuba and the other West India Islands raise tobacco in large quantities. Its production in Mexico, Central America, and South America is increasing. India, Turkey, Japan, and the East Indies produce and use much tobacco. In Europe tobacco is extensively grown in Spain, France, Germany, and Italy.



Sugar-cane. — Sugar-cane is a plant somewhat resembling corn. It requires a moist soil and warm climate. From the juice pressed from its stalk sugar and molasses are made. (27.)

Cutting Sugar-Cane.

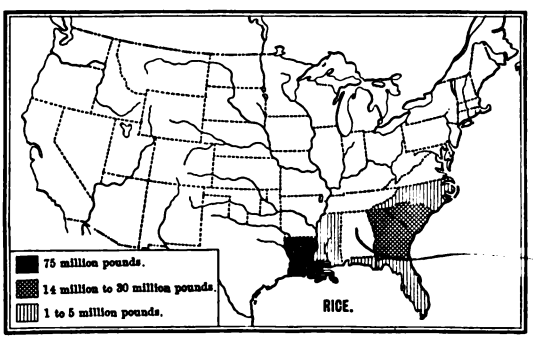
In the United States sugar-cane is grown chiefly in the southern states near the Gulf and the Mississippi. Which state produces the greatest amount of sugar? Which states are of the second rank? Which of the third?

In a Sugar-Cane Mill.

The consumption of sugar in our country is so great that we are unable to produce more than a small part of the sugar used here. Most of our sugar is imported from Cuba, Brazil, Java, and Hawaii.

A Sugar-Cane Mill, Louisiana.

Rice. — Rice grows only in a warm climate and upon low lands that are often overflowed or that can be easily flooded. From the peculiar conditions of its growth, where it is raised at all it is raised to



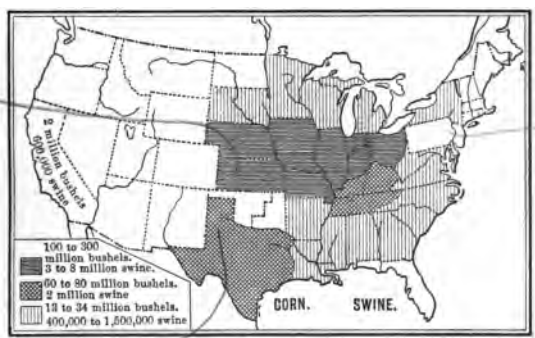
the exclusion of nearly everything else. This is the grain of southeastern Asia. It is the "staff of life" to the people of

China, India, Japan, and adjacent islands. Considerable quantities of rice are raised also in Italy. (27.)

Where is it raised in the United States? Which state ranks first in its production? Which states are of second rank?

Corn. — Indian corn is a native of North America, where it has long been cultivated. This was the only cereal cultivated by the Indians.

Corn requires a warm, sunny summer with frequent showers. It is less hardy than wheat to endure cold. It is now the chief grain of the southern and central states. Notice from



the map that where corn is raised, hogs are also kept to fatten upon the corn. In California, and other western states, hogs are fattened upon alfalfa as well as corn.

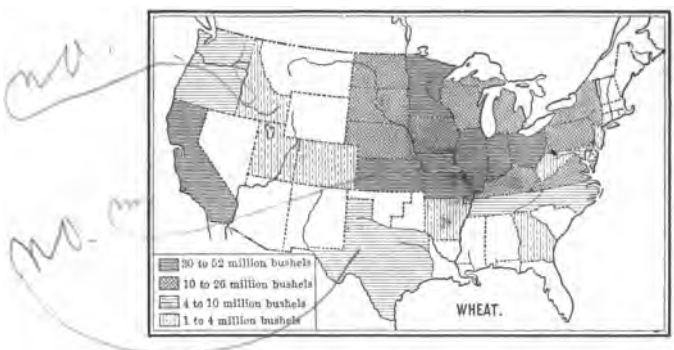
The value of the corn crop in America is double that of the wheat crop or the cotton crop; but corn is not exported from the United States to so great an extent as wheat or cotton. Much more corn is raised in the United States than in all the rest of the world. (97. 6, 7.)

Study this map and name the chief corn-producing states. Which are of second rank? Which are of third?

Corn is grown abundantly in South America. Southeastern Europe, Turkey, Egypt, and eastern Australia raise corn for export. How do you account for this? (27.)

Wheat. — Wheat is the most valuable plant raised in the temperate zone. Although it has been raised from the time of man's earliest cultivation of the soil, it is only within the last hundred years that it has become of general use among the poor. Its use is rapidly increasing. Its product is now about six times what it was in 1850. The center of greatest production in this country is gradually moving westward.

The chief granary of the United States at the present time is in the section contained between the Missouri and the Ohio



on the south and the Canadian frontiers on the north. Among these states Illinois holds first rank. Which states are ranked with Illinois as the greatest wheat-producing states? Which states are of second rank? Which are of third? (99. 3.)

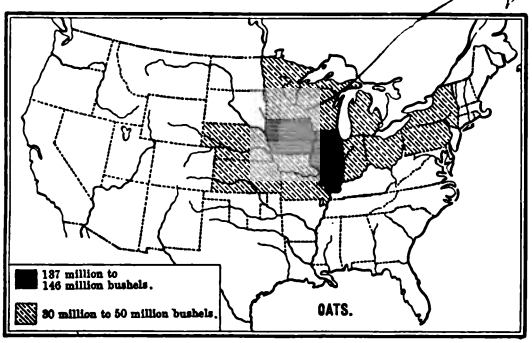
The United States and Russia are the greatest wheat-producing countries of the world. France, India, Hungary, Italy, and Germany are next in order as wheat-raising countries. The production of wheat in Argentina is great and is increasing each year. (113. 11; 27.)

Though France, Italy, and Germany produce large quantities of wheat, they consume it all and import additional amounts from other wheat-raising countries.

England formerly supplied its own wheat and even exported some of it; but the density of its population and the employments of its people are such that it can no longer profitably do this.

Oats. — Oats grows in more parts of the world than wheat or corn. This grain is adapted to a northern region and a cool, moist soil. It is the best of all grains for horses, and is consumed in increasing quantity as food for people. It is raised in great quantities in Scotland and northern Europe.

In the United States, Iowa and Illinois produce the largest amount of oats.



Barley. — Barley is raised still more widely than oats.

Barley was among the ancients what wheat is among modern people, the favorite food of the wealthier classes.

California, Wisconsin, and Iowa raise more barley than any other states.

Rye. — Rye is cultivated largely in Europe. It thrives in a poor soil and in cold and elevated regions.

In our country Wisconsin, Pennsylvania, and New York raise the greatest quantities.

Potatoes. — The potato, like corn, is a native of the New World. Potatoes are of very great importance, as they can be

readily grown in large quantities. They are found on the rich man's table, and are also the staple article of diet of the poor.

Grapes. — The grape grows best where the summers are long and warm. It is like corn in its requirements, but is more liable to damage by early frosts. What are the requirements for the growth of corn?

In the United States, California and the states of the Ohio valley are the grape-growing states. (103. 1, 4.)

In Europe, Germany and the basin of the Mediterranean, particularly in France, produce grapes. (116. 13.)

What uses are made of grapes?

Orchard Products. — Of orchard products, California raises the most plums and apricots; New York and California raise the most pears; Georgia and Texas the most peaches, and Arkansas, North Carolina, and Tennessee the next amount; Ohio and Michigan raise the most apples, and Kentucky, Illinois, Indiana, Missouri, New York, and Virginia are next in rank. (103. 14.)

Flax. — Flax is a plant of great value. From it is woven linen, and the seed furnishes an oil used in mixing paints. It is grown mostly in Russia, northern Italy, central Europe, and Ireland. Its growth in the United States is extending, while cotton is taking its place in Egypt. In India flax is raised chiefly for the seed.

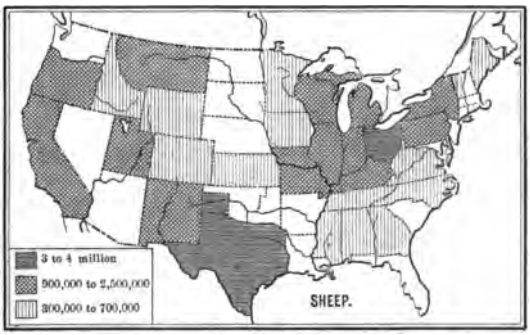
Hemp. — Hemp is a plant somewhat like flax; but its fibers are coarser and stronger. It is grown where flax is grown.

REFERENCES.

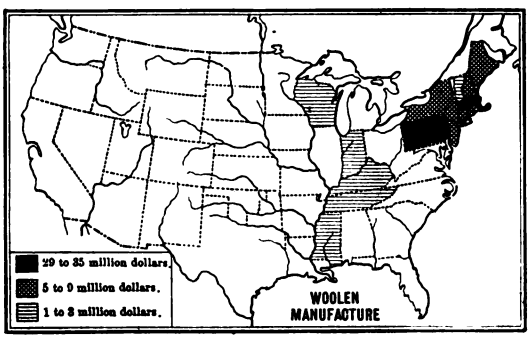
WHITNEY: The United States.
GANNETT: The Building of a Nation.
DE CANDALLE: Origin of Cultivated Plants.
PATTON: Natural Resources of the United States.
SHALER: The Story of our Continent.
CHISHOLM: Handbook of Commercial Geography.
TILDEN: A Commercial Geography.

45. Animal Products.

Wool. — By wool we usually understand the fleece of the sheep, although the short, crispy hair that grows on the alpaca, the llama, and some kinds of goats, is also called wool.



Sheep are reared in most countries of the temperate zone. Their wool makes the most suitable material for clothing in temperate and cold climates. Sheep are also reared for mutton.



There are more sheep in Europe than in any other part of the world. Australia is second in this product, and the United States third. Where in the United States are the most sheep

reared? Do the states which raise the greatest number of sheep manufacture the most woolen goods?

Which states are the leading woolen-manufacturing states? Which are of second rank? Third?

Europe and the United States manufacture their wool into woolen goods, and import an additional quantity of wool from other countries.

Great Britain is the leading nation in the manufacture of woolen goods.

The three chief wool-exporting regions of the world are Australia, Argentina and Uruguay, and South Africa.

In these countries the conditions for raising wool at small expense surpass those of any other portion of the world. The climate is mild; land is cheap, and suited for pasturage. Wide ranges can be obtained. The lands where the sheep are raised border upon the sea, permitting the bulky fleeces to be sent cheaply to England and America.

Silk. — Silk is obtained from the cocoons of the silkworm. This animal feeds on the leaves of the mulberry tree. China, Japan, and India in southern Asia, and Greece, Italy, and France in southern Europe, are the countries from which most silk is exported.

France, the United States, Switzerland, and Germany are the silk-manufacturing countries. China and Japan manufacture silk for home use, and also export raw silk.

Fur. — Fur is obtained mainly from animals that live in the cold regions of the northern hemisphere. Why northern? The seal of Bering Sea is the most valuable fur-bearing animal.

Leather. — Hides or skins are made into leather by subjecting them to the action of tannic acid. Most of this acid is obtained from the bark of oaks and hemlocks.

Pennsylvania, New York, and Massachusetts in the east, and Wisconsin and Illinois among the central states, are engaged extensively in the business of tanning.

Germany, France, and Russia also make large quantities of leather. What countries do you think export hides? For what is leather used?

Beef, Pork, and Mutton. — Beef, pork, and mutton are the chief articles of meat diet. Cattle are raised most profitably in the sparsely settled sections of the temperate zone where grass grows luxuriantly. The soil must not be swampy or dry and rocky. Sheep may be raised profitably on soil too dry and hilly to be suitable for cattle.

The great cattle-raising sections of the world are the western portion of the Mississippi valley, the southern part of South America, and Australia. Sheep are raised in the same sections, though more cattle than sheep are raised in the United States. Where are hogs raised?

Texas and Iowa raise the most cattle. Kansas and Illinois are of the second rank; Missouri, Nebraska, New York, Pennsylvania, Indiana, and Wisconsin are of the third.

Fish. — Almost all the fish used for food live in cold waters and come with the cold currents to places accessible to man. Cod, mackerel, herring, trout, and salmon are the most important food fishes.

The United States is the foremost nation in the value of its fisheries, Great Britain is second, Japan third.

Spreading Codfish on Rocks.

The most valuable cod fisheries of the world are on the Banks of Newfoundland. Maine and Massachusetts are the two states engaged in this business.

The North Sea has fishing banks for cod and herring, and there are fine fishing grounds along the northwestern shores of the United States.

Herring are taken off the coast from Maine to Labrador, as well as off the coast of Europe in corresponding latitudes.

Herring are taken largely in the winter, and being frozen solid at once, are readily transported to the cities of the northern states. Small herring are often put up in cans and called "sardines" or "brook trout."

The most valuable salmon fisheries of the United States are off the northwest coast, and along the Columbia River. The salmon are canned and exported to all parts of the world.

Mackerel are found in great schools off the east coast of New England, and the coasts of Europe in corresponding latitudes.

They are mostly taken by seine. These seines are fastened in a train sometimes two miles in length, and many barrels of fish are taken at a single haul.

Bluefish are becoming abundant in the warm waters of the Atlantic along the coast of New Jersey.

Sea-bass are found farther south, and are caught in large quantities along the coast of Florida.

Oysters. — The oysters of America are larger and more palatable than those of Europe, and the value of the annual product is more than five times as great. Oysters are found in the Atlantic Ocean at different places from Narragansett Bay to Florida. They are most abundant in Chesapeake Bay. From Maryland come nearly one-half the oysters of the United States. (92. 10.)

Oysters and clams are also found in Puget Sound, but these are not equal in size to those of the Atlantic coast. The eastern oyster has been transplanted to the waters of the Pacific Ocean, and thrives well.

Observe that the great fishing grounds of the world are at the northeast and the northwest of the United States and in the North Sea.

REFERENCE.

WHITNEY: The United States.

46. Mineral Products.

The Rocky Mountain system is the most remarkable mineral region of the world. The United States produces more gold, silver, copper, lead, and iron than any other country, and is second in the production of coal, zinc, and mercury.

The use of natural gas and the production of petroleum are greater here than elsewhere in the world.

A Colliery.

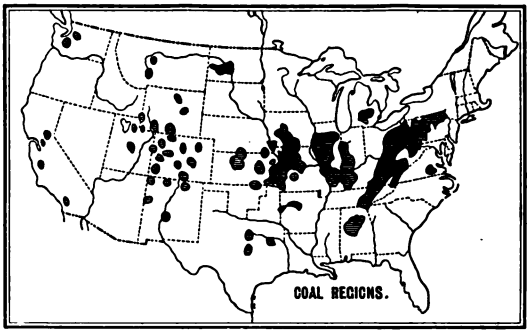
The area underlaid by **coal** in the United States is the largest in the world, and more coal is mined here than in any other country except England.

Without the coal to smelt our iron ores very little iron or steel could be produced. Coal warms our houses, and by means of the gas which is manufactured from it, lights them as well; it drives our engines in mills and factories, on ships, and railroads. After gas has been extracted from coal there remains a substance called coal-tar, from which aniline colors, carbolic acid, naphtha, and other products are obtained. The coke is used for fuel.

An Anthracite Coal Breaker.

Coal is mined in three-fifths of our states.

The most important coal field in the United States is the **Appalachian field,** from which three-fourths of our coal is



mined. This field extends from northern Pennsylvania southwestward into Alabama, and is nearly 900 miles long and from 30 to 180 miles wide. East of the Blue Ridge, chiefly in Pennsylvania, lies the anthracite coal, and west, the semi-bituminous. West of the Alleghany Mountains is the bituminous, lying partly within eight states.

Coal Mining by Electric Light.

The state of Pennsylvania produces nearly three-fifths of the coal of our country, and this coal is of the best quality. The most thickly populated part of our country — the New England states and New York — obtains its coal from Pennsylvania.

Coal Pickers at Work.

Philadelphia is the chief coal-exporting city. Ohio and West Virginia stand next in the amount of coal produced in this Appalachian region. The quantity mined in the other states is small, for these states are far from manufacturing centers, and most of their fuel is obtained from their large forests.

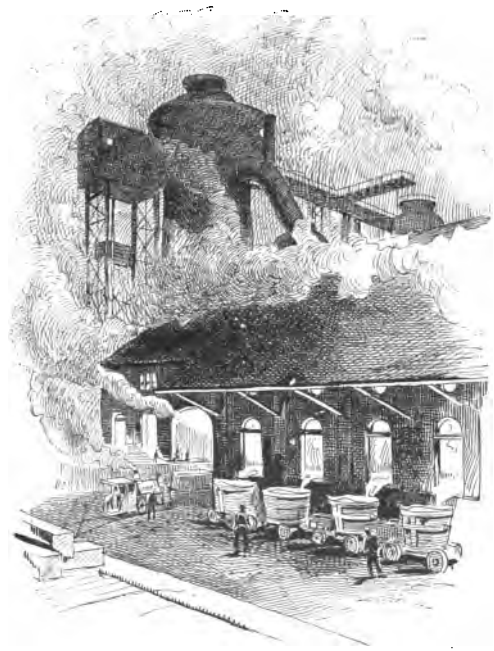
The **Central coal field** is the next in importance. It underlies parts of three states, — Illinois, Indiana, and western Kentucky. Illinois, though far behind Pennsylvania in the amount of coal produced, is the second coal-producing state of the

Union. Parts of both the Appalachian and central fields are in Kentucky, but they have been little worked.

The **Western coal field** covers a large area, comprising parts of Missouri, Iowa, Nebraska, Kansas, Arkansas, Indian Territory, and Texas. The coal is of inferior quality, but it is

very valuable for fuel, as these states are not well supplied with forests. Of these states, Iowa produces the most coal.

Nearly all the western states have deposits of inferior coal. Most of it is lignite, which is mined for fuel where fuel from the forests is scarce, especially in Colorado, and Wyoming.



An Iron Blast Furnace

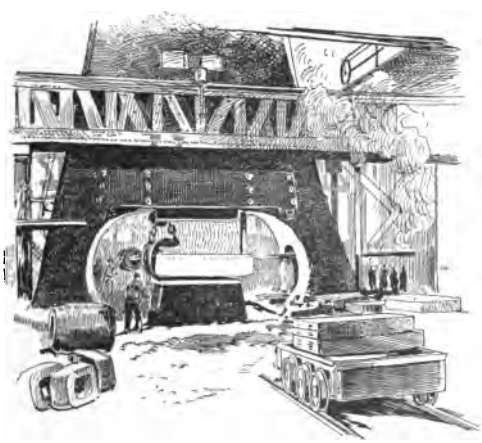
Coal is found in abundance in northern Europe, especially in England. It occurs also in Canada, China, and Australia.

Iron. — Iron is the only common metal that can be welded, and it is, therefore, the most useful metal that we have. What are some of its uses? What is meant by welding? Why does the fact that iron can be welded make it the most useful of metals?

Few other metals are found so widely distributed as iron. Great Britain has always produced more iron than any other country until within the last few years, but now the United States leads in this product, Great Britain ranks second, and Germany third. Iron was exported from Britain before the Christian era.

Iron is not often found in a pure state. It must be extracted from the iron ore, in which various other substances are combined. The ore is smelted; — that is, reduced to a molten (melted) condition, by heat and chemical action, in a blast furnace. The iron sinks to the bottom of the furnace, and is then run off into molds. This product is called pig iron or cast iron. The value of the pig iron produced in our country exceeds that of the gold and silver. Pig iron is brittle. In order to make it tough, it is remelted and stirred, so that a part of the carbon which it contains is driven out. The fluid iron is allowed to cool, and is then hammered and rolled into bars and sheets of wrought or malleable iron.

Rolling Sheet-Iron.

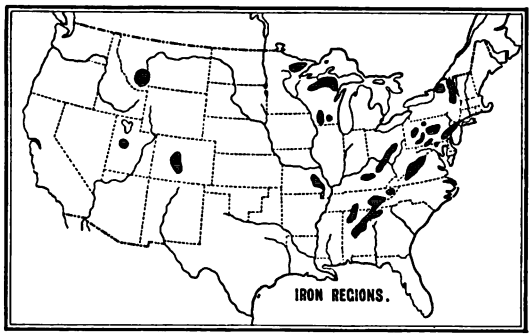


The Great Steam Hammer.

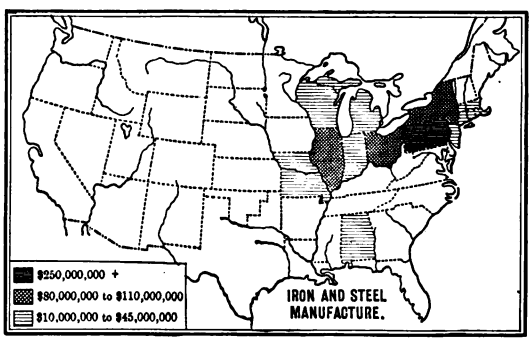
By another process pig iron is converted into steel, which is not only more durable than iron, but also lighter, and is very hard and elastic. It is used in making ocean steamers, bridges, weapons, and cutlery; tools and springs; cars and carriages.

The chief iron ore districts are about Lake Superior and in the Appalachian region.

Except in the Lake Superior region, iron ore is found



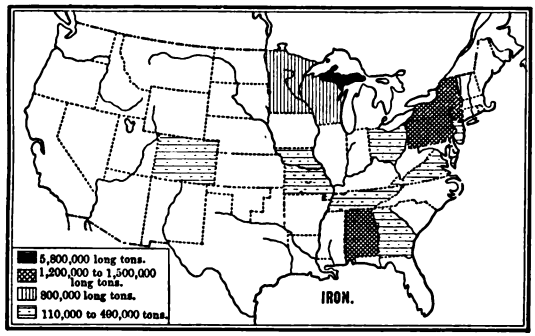
where there is also abundance of coal or of wood for making charcoal, and of limestone — a substance which is put into the smelting furnace to aid in the separation of the iron from the ore. A very large portion of the ore from Lake Superior



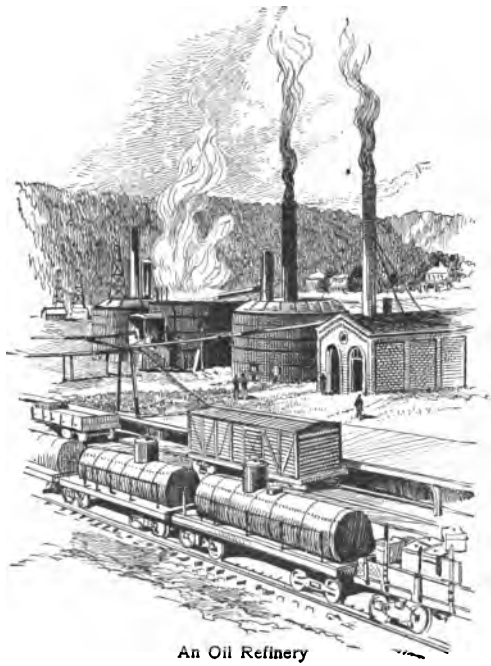
is cheaply transported, partly by water, to the furnaces at Chicago, Pittsburg, and other centers of iron manufacture.

Two-fifths of the iron ore of the United States is produced

in Michigan. Which state leads in the manufacture of iron and steel?



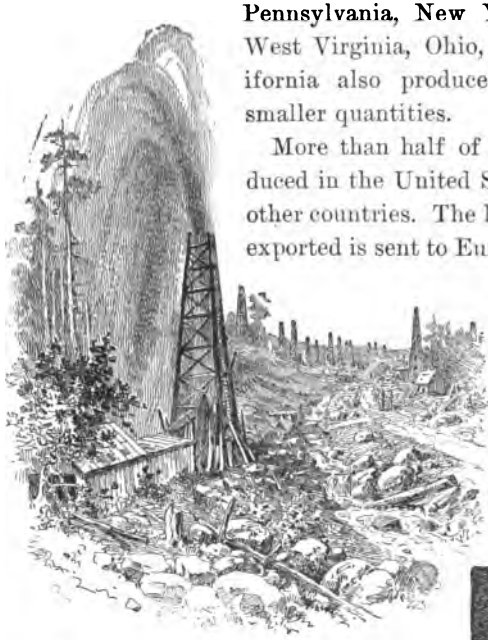
Petroleum. — Petroleum, or rock-oil, is an oil obtained by sinking wells in the earth. From some oil wells the oil flows freely, while in others it is brought to the surface by pumps. The crude oil is carried in tank cars, or is sent by great force pumps through iron pipes, sometimes a distance of several hundred miles, to refineries. There, by distillation, a light oil, kerosene, is produced for use in lamps, a some-



An Oil Refinery

what heavier oil for heating, and still heavier oils for oiling machinery. In the United States the chief oil regions are in Pennsylvania, New York, and Indiana. West Virginia, Ohio, Colorado, and California also produce crude oil, but in smaller quantities.

More than half of the refined oil produced in the United States is exported to other countries. The larger portion of that exported is sent to Europe. Russia is now developing her great oil region, which extends along both sides of the Caucasus. Nowhere else are there so many free-flowing wells, or wells that produce so great a quantity, as in this Caucasian region. (122. 15.)



A Field of Derricks. Effect of Torpedo.

Natural Gas. — Throughout the petroleum region of the Alleghany plateau, and farther west in Ohio and Indiana, natural gas is obtained by sinking wells. This gas is used for illuminating and heating purposes. Most of the iron and steel works within the natural gas region use this gas for fuel. (96. 3.)

A Burning Oil Tank.

Gold and Silver. — Gold is usually combined with silver. It was first discovered as shining particles or in large nuggets, in beds of streams or wherever it had been freed from the gold-bearing rocks.

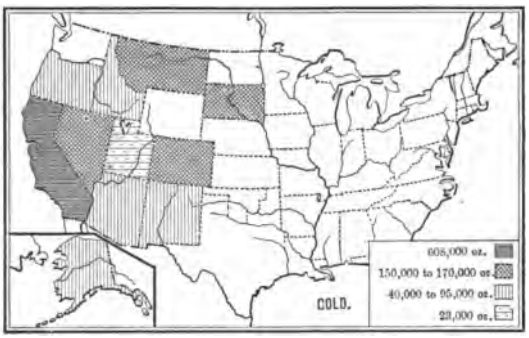
Panning Gold.

Placer mining is the earliest and simplest method of gold mining. In this form of mining the alluvial soil and gravel containing gold brought from gold-bearing rocks is by frequent washings made to give up its particles of gold. In the hydraulic process, water is forced with such power through a huge hose that it tears away the hillsides, and the gold sinks to the bottom of sluices made to collect it. This brings down rock and earth upon farming land. On this account hydraulic mining has been prohibited in some places.

Sluicing Gold.

In quartz mining the rock, or quartz, is obtained by drilling and blasting, and the rock after being reduced to powder is mixed with water and quicksilver. The gold and quicksilver unite. By heating this compound, or amalgam, the quicksilver is driven off and the gold is left.

California produces more than one-third of the gold of the United States. The amount of gold obtained each year in this state is now only about one-fifth what it was in 1860. Which



states rank next in amount of gold mined? Which are of the third rank? Which is of the fourth rank?

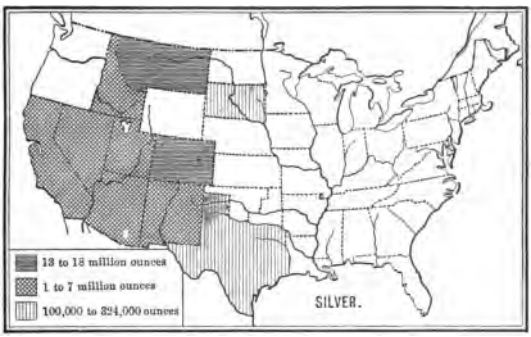
At the End of a Silver Mine.

Of silver, Colorado produces the largest amount, and Montana the next. Which states are of the second rank in silver production? Which of the third rank?

The United States produces more gold and silver than any other country, and yet the value of both these precious metals is not equal to that of the wheat, of the corn, or of the cotton raised in this country. (102. 4.)

Both gold and silver are found widely distributed over the earth. The chief gold-producing regions next to the United States are Australia, Russia, and South Africa. Silver is mined in Mexico and in the Andes Mountains.

Copper. — Copper is used for utensils, for sheathing ships, and in the arts, but especially as a conductor of electricity. Its alloys are of very great value. Copper mixed with zinc



becomes brass, mixed with tin it becomes gun metal or bell metal. Bronze is a compound of copper, tin, and lead. German silver is an alloy of copper, zinc, and nickel. Gold and silver coins and jewelry have copper mixed with the precious metals to make them more durable. (97. 10.)

No other country produces so much copper as the United States. It is found chiefly in Montana, along the shores of Lake Superior in Michigan, and in Arizona. Colorado, California, New Mexico, and Utah also produce smaller amounts.

The other copper-producing countries of the world are Spain, Chile, and Germany.

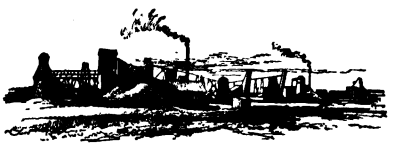
In a Silver Bullion Smelter.

Lead. — Lead is chiefly used in making water pipes and shot. White lead, used in paints and in glazing earthenware, is a compound of lead and carbonic acid.

The United States leads in the production of lead, Spain and Germany ranking next.

Much of the lead produced in our country comes from the silver districts of Colorado, Idaho, Utah, and Montana. Next to Colorado, Missouri produces the most lead.

Zinc. — In the United States, the most zinc is mined in Missouri. Many states, especially New Jersey and Pennsylvania, are rich in this metal. Germany and Belgium are the chief zinc-producing countries.



Group of Zinc-Mining Plants on "The Thousand Acre Tract," Joplin, Mo.

Quicksilver. — Quicksilver, or mercury, is the only metal that is fluid at ordinary temperatures. It is used in scientific instruments and in combination with other metals to form amalgams.

Most of the mercury of the world was formerly obtained from Spain and Austria, but since 1850 a large amount has been produced annually in California.

Salt. — Salt is obtained by evaporating the water of the ocean, of salt lakes, or of brine obtained from salt wells, and also by mining rock salt. In California, sea water is evaporated. In Utah the water of Great Salt Lake furnishes considerable salt. By far the greater part of the salt manufactured in our country comes from brine obtained from salt wells in the states of Michigan, New York, Ohio, and West Virginia. In Michigan, the making of salt and the sawing of lumber are carried on together, the refuse lumber from the mills furnishing fuel for the fire under the salt pans. Hence salt can be produced there at less cost than in the other states. (90. 3; 97. 12.)

Deposits of rock salt exist in many states. More salt is produced in Great Britain than in the United States. At a town in Germany an immense layer of rock salt, 1000 feet thick, has been found at a depth of 800 feet. (122; 14.)

REFERENCES.

TARR: Economic Geology of the United States.
WHITNEY: The United States.
GANNETT: The Building of a Nation.
PATTON: Natural Resources of the United States.
SHALER: The Story of our Continent.
CHISHOLM: Handbook of Commercial Geography.

47. Manufactures.

The manufactures of the United States are increasing rapidly in extent and value. They are now three times as great as they were thirty years ago, and surpass in amount those of every other country.

The manufactures of the United States are mainly used at home. Our country has not yet become a great exporter of manufactured goods, except of its agricultural products.

You may not think of beef, pork, and mutton, and preparations made from them, as manufactures, but such they are, and altogether they are the most important manufactures we have. These are called provisions. The products from the flouring and grist mills are next in value to meats. These are called breadstuffs. Then come iron and steel from iron ore, and articles made from iron and steel in foundries and machine shops. Lumber is our next most important product.

The Atlantic coast has the advantage of possessing abundant water power. The people of this section began manufacturing earlier than those of other sections, and they have retained in great measure the advantage which this gave them. They now manufacture more goods than all the rest of the country.

The greatest progress in manufacturing has been in the region along the Atlantic seaboard from Portland to Philadelphia. In that section are water power, opportunities for transportation, a dense population, and much wealth. Ohio, Indiana, and Illinois, because of their nearness to the Great

Lakes and their opportunities for getting materials and finding markets, are also important manufacturing states.

In the value of manufactured products as well as in commerce, wealth, and population, New York is the Empire State. Pennsylvania is second in the value of manufactured products. Illinois is third. Massachusetts, the chief of the New England States, is fourth. Ohio and New Jersey are fifth and sixth.

New York is the greatest manufacturing city of the United States. Chicago and Philadelphia are second and third. The value of the manufactures in these three cities is more than one-fifth of that of the entire country.

In proportion to their size, Rhode Island and Massachusetts are the greatest manufacturing states. They make half the cotton goods produced in the United States.

Illinois is the chief meat-packing state. New York and Kansas rank next in this industry, followed by Pennsylvania, Massachusetts, Missouri, New Jersey, and Ohio. The flour-making states are Minnesota and New York. Pennsylvania, Ohio, Illinois, Missouri, and Indiana are also large producers of flour.

Iron and steel are manufactured to a greater extent in Pennsylvania than in all the other states, but large quantities are made in New York, Ohio, and Illinois. What states are of the third rank in this manufacture?

In the products of foundries and machine shops New York, Pennsylvania, Ohio, Massachusetts, and Illinois lead.

The people of the United States are noted for their remarkable inventive power. The telegraph, the telephone, electric lighting, and the application of electric power to machinery and the movement of cars are American inventions. Others are the cotton gin, the typewriter, the revolver, sewing machines, the best agricultural machines, such as the mowing machine, the reaper, the binder, and the best wood-working and shoe-making machinery.

48. Commerce.

A nation's commerce, domestic and foreign, is the measure of its greatness.

How does the domestic or inland commerce of the United States compare in extent with that of other nations?

England is the foremost nation in the extent of its foreign commerce. France is second, and Germany and the United States are third and fourth.

In this country we need to import many goods, for other countries raise in abundance products that we want and cannot raise so well. We import sugar, for we consume much more sugar than we raise. We import tea and coffee, which we consume in large quantities and do not raise at all. From warm countries we get fruits and spices. Wool and woolen goods, and silk and leather, with articles manufactured from them, are imported. Turn to Part II., pages 27 and 160, and notice from what countries each of these articles is obtained.

We export cotton, provisions including meat, dairy products, and breadstuffs, tobacco, petroleum, iron, and steel, and articles made from iron and steel. These are our chief exports. The greater part of them is sent to Europe.

The United States exports in larger quantities than any other country, cotton, tobacco, dairy products, meats, and timber, and is surpassed in wheat exports only by Russia. Although the United States raises more wheat than any other country, yet about four-fifths of it is consumed at home.

What countries compete with ours in the export of cotton? Of wheat? Of tobacco? Of meat products? Of iron and steel? Of petroleum?

The United States is well situated for the development of an extensive foreign commerce. What great cities are favorably situated as exporting centers?

49. Lake Canals.

The most important canals in the United States are those which are used for the transportation of the products of the Central States to the Atlantic seaboard. The cost of transportation by canal is only about three-sevenths as much as by rail, which is an important difference when speed is not required.

From Chicago through Lake Michigan there is an easy passage to Lake Huron, but the passage between Lake Superior and Lake Huron is by the St. Mary's River, in which there are dangerous rapids. Around these rapids a canal has been made, called St. Mary's Canal. This has been once enlarged, and is now undergoing a second enlargement. When it is completed it will be the largest ship canal in the world. More tonnage passes through it than through the famous Suez Canal.

The next obstruction to navigation was Lake St. Clair, between Lakes Huron and Erie. This lake was too shallow to permit large boats to pass through it. To overcome this difficulty the government has dredged a channel through the lake.

Between Lakes Erie and Ontario is the Niagara River with its falls. Vessels can discharge their cargoes at Buffalo to go by rail or by the Erie Canal to New York, or they can pass through the Welland Canal, which runs through Canada parallel to the Niagara River. If they pass through this canal and Lake Ontario, the St. Lawrence will afford them a way to the Atlantic, but the Lachine Rapids in the St. Lawrence above Montreal must be encountered. Around these rapids the Lachine Canal has been constructed, and through it all boats pass in ascending the river, and all but large passenger boats in descending it. Smaller canals are constructed at the less important rapids of the St. Lawrence.

From Montreal to the ocean the course is unobstructed in summer, but closed with ice in the winter.

50. Railroads.

Railroads are the chief means of transporting goods. The first railroad in the world was opened in England in 1825, and the second one in the United States in 1827, to carry granite from Quincy, Mass., to tide water. Now there are in the United States more than 175,000 miles of railroad, which is six times as much as in any other country, and as much as in Europe, Asia, and Africa combined. (12–13.)

In Illinois there are about 10,000 miles of railroad. This is more than there were in the whole United States in 1850. Kansas, Texas, Pennsylvania, Iowa, and New York are next in order with about 8000 miles each. Massachusetts has more miles of railroad in proportion to its size than any other state.

REFERENCES.

WHITNEY: The United States.
GANNETT: The Building of a Nation.
TROTTER: Lessons in the New Geography.
CHISHOLM: Handbook of Commercial Geography.

51. Growth of Cities.

If a city has excellent facilities for commerce, both by land and water, and especially if the movement of goods is such that they are transferred from one route to another or "break bulk" at this city, then the prospects of this city's rapid growth are good. Goods are said to "break bulk" when they change from one conveyance to another, or are removed from the packages in which they have been carried. Changing from wagon to boat, boat to ship, ship to warehouse, warehouse to cars, cars to trucks or stores, is breaking bulk.

Breaking bulk requires the labor of men, the use of teams and machinery, and thus gives remunerative employment to laborers.

It renders the location favorable to wholesale trade. The facilities for obtaining and handling goods, and for sending them in various directions by different and competing conveyances, make such places good locations for manufactories.

Manufactures and wholesale trade require capital to be invested in mills and shops, stores, goods, and warehouses, and so make a center for a great banking business.

All these things build up a city; and because the people engaged in commerce, transportation, banking, and manufactures center at these favorable points, other people gather there also. Professional men, builders, workmen of all kinds, find employment, and hence the city grows.

Since goods are carried at less expense by water than by land, it is most profitable to carry them as far by boat as is convenient. Cities having foreign trade are not built out upon capes to make the land transportation longer and the sea voyage shorter, but are built as far inland as sea-going vessels can readily come. In this location, too, the best harbors for shipping are secured, and this is, of course, important.

Besides manufactures and commerce, which are the main causes of the growth of cities, there are other reasons why the population of cities increases. Washington is the capital of the United States, and is an important city for this reason. Many people must live in Washington to conduct the business of the government in its various departments. The government needs to erect large buildings. This brings workmen and builders. All these people must be provided with houses, food, clothing, transportation, books, professional service. This brings capitalists, marketmen, store-keepers, street-railway builders and operators, printers, lawyers, doctors, clergymen, teachers, to the city; and the gathering of all these people makes the city larger and larger year by year. So it is to a less degree with the capitals of the states, and so it is sometimes to a greater degree with the capitals of other nations. What capitals can you name that are great cities?

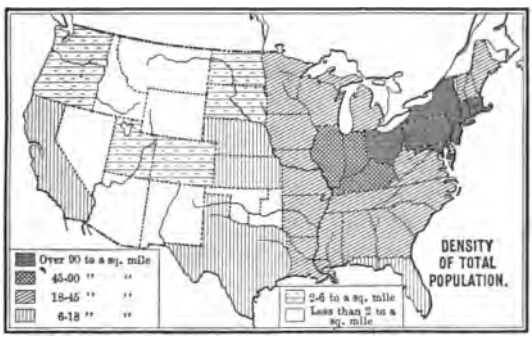
52. Cities of the United States.

The growth in recent years of cities in the United States has been remarkable. In 1790 only three persons of each one hundred of the population lived in cities. In 1890, twenty-eight out of every hundred were residents of cities. In the eastern states almost the entire increase of population for the last thirty years has been in the cities.

Out of the 63 millions of people of the United States, 18¼ millions live in cities. Notwithstanding the opening up of the immense agricultural and mining regions of the United States, the increase of population in the cities is much more rapid than that in the rural sections. This is true not merely in the United States, but throughout the civilized world.

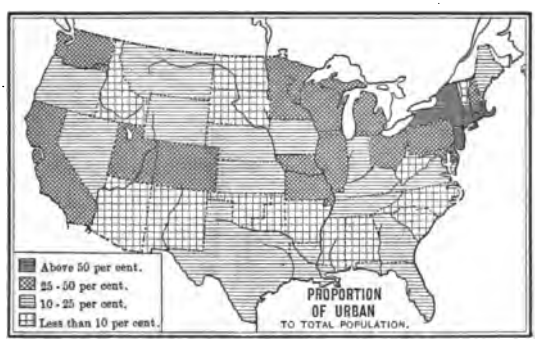
Between 1880 and 1890 the population of the cities of the United States increased 62 per cent and that of the rural parts 12 per cent.

The cities which grew most rapidly during the ten years between 1880 and 1890 are those best situated for commerce by rail and water.



These cities are Chicago, New York, Brooklyn, Philadelphia, Minneapolis, St. Louis, Cleveland, and Baltimore.

Tell where each of these cities is located and what advantages it has for commerce by rail and water.



There are in the United States sixteen cities having a population of 200,000 or more. See Part II., page 158.

If we arrange these cities in groups according to size, we shall have *four* cities of the first class, comprising those having a population of 800,000 or more; *three* of the second class,

having a population between 400,000 and 500,000; and *nine* of the third class, having a population between 200,000 and 300,000. *Twelve* cities have a population between 100,000 and 200,000.

The cities of the United States can be grouped in four divisions, corresponding nearly with the drainage basins. These are the regions tributary to the Atlantic, to the Pacific, to the Great Lakes, and to the Gulf, including the Mississippi system. Name some of our great cities belonging to the Atlantic group; to the Pacific; to the Great Lakes; to the Gulf.

53. Great Cities of the Atlantic Coast.

The four great commercial cities of the Atlantic coast are Boston, New York, Philadelphia, and Baltimore. These are all, in effect, on bays or arms of the ocean stretching inland.

Boston is well located to control the trade of the greater portion of the New England States; but New York is one hundred and forty miles nearer the rest of the United States.

Philadelphia, the third city of the United States, is on the Delaware River at the junction of the Schuylkill River. It is one hundred miles from the mouth of Delaware Bay, and at the head of deepwater navigation. Its location is favorable for trade with a prosperous section of the country. Its ready access to mines of coal and iron on one side and the ocean on the other has made it a great manufacturing and commercial city, and the foremost ship-building city of the Union.

Philadelphia and Baltimore are well located to control the commerce of the territory near them, but until recent years they have been shut off by the Appalachian mountain system from ready access to the Mississippi valley, which is the center of population and products in the United States. (29.)

New York is the largest city not only of the United States, but of the New World. It is situated on a long, narrow island

between the mouth of the Hudson River and Long Island Sound. It has the ocean, the river, and the sound for its waterways. New York Bay forms an admirable harbor, the best on the Atlantic coast.

By way of the Hudson and the Mohawk valley, New York finds an entrance to the trade of the Great Lakes and of the Mississippi valley. This natural way to the West has been utilized by the construction of the Erie Canal and of the great railroads following the same natural route. These have made New York City a convenient port for imports and exports between Europe and the greater part of the United States, and therefore the greater portion of the foreign trade of the United States passes through New York.

New York is commercially much larger than its census population would indicate. Brooklyn, Jersey City, Hoboken, Newark, Elizabeth, Long Island City, Yonkers, are commercially portions of New York, and all taken together have a population of more than 3,000,000. (159.) The London police have jurisdiction over more than six millions of people. London is the world's largest center of population. New York is the second. (25.)

54. Great Cities of the Mississippi Valley.

The products of the West must be gathered and forwarded to New York for shipment to Europe. Importations from Europe and the manufactures of the eastern states must be distributed through the Mississippi valley and the West. Lake Michigan, extending far southward into the Mississippi valley and affording water connection with New York and the seaboard, fixes the location of the great central city. This city must have a good harbor; it must also be near the southern point of the lake, so as to connect with the great east and west railways. Chicago River furnished the harbor, and the enterprise of Chicago citi-

zens has taken advantage of the opportunities afforded by its location to build the second city of the nation and to give it a growth surpassing in its rapidity any other. (36.)

The Chicago River rises southwest of the city very near the Des Plaines River, which runs into the Illinois. These streams are near together in places, and are united by swamps and ponds, so that sometimes in seasons of freshet the water from the Des Plaines River floods the Chicago River. In the early times they made convenient waterways for canoes from the Great Lakes to the Mississippi, and this led to the establishment of a fur-trading fort, afterwards a port, at the mouth of the Chicago River. Finally a canal connecting the Lakes and the Mississippi was built along the line of this waterway, and thus the location of the city was established.

New York and Chicago control the east and west trade of the northern states by reason of their advantageous situations, and as the east and west trade is the main trade in the United States, these have become the two largest cities.

St. Louis was founded by the French in 1764, and was made the capital of Upper Louisiana. Its early recognition as the metropolis of this section of country has combined with its splendid natural advantages to make it the chief city on the Father of Waters.

The Mississippi River is a great commercial highway in the midst of the most productive valley of the world.

At some point between the source of the Mississippi and its mouth it is necessary to have a depot, where the products of the cool temperate zone may be exchanged for those of the subtropical or south temperate zone. There is need, too, of such a depot for the exchange of freights between the light-draught steamers of the upper river and the deep-draught and larger boats of the lower river and the Gulf.

The Missouri opens the way to vast regions rapidly developing, and connects these regions with the markets and manu-

factures of the east and south. Where it enters the Mississippi River is a location favorable to the growth of a great city. Just at the mouth of this river the banks are not suitable for the site of a city, and so at the nearest bluff down the river the city of St. Louis has developed.

Five bridges across the Mississippi and Missouri Rivers connect St. Louis with the east and northeast. Its connections by rail east and west, by the Mississippi River north and south, and by the Missouri River with a large territory in the northwest have given the city great commercial advantages over the other cities upon the Mississippi. (45.)

At the north near the head-waters of the Mississippi are the "twin cities," Minneapolis and St. Paul; at the south near the Gulf is New Orleans. These three commercial centers at the north, the middle, and the south will probably always remain the great cities of the Mississippi valley. (49.)

55. Great Cities of the West.

In the center of the region west of the Mississippi, and about equally distant from the Lakes, the Gulf, and the Pacific, is Denver, the Queen City of the Plains, with a dozen lines of railway reaching all parts of the country, and with a north and south road connecting all the east and west railroads between the Mississippi and the Pacific except the Northern Pacific.

The great city of the Pacific coast is San Francisco. This city is to the Pacific section of the United States what New York is to the Atlantic. It has an excellent harbor, and is connected with the interior valley of the state of California by the Sacramento River running to San Francisco Bay from the north, and by the San Joaquin from the south. Its commerce reaches the Pacific coasts of North and South America, the eastern parts of the United States, Hawaii, and even China, Japan, and India. (43.)

56. Government.

The government of the United States is democratic, or republican, for both words mean nearly the same thing. Either word signifies that the people choose their own officers and elect those who make their laws.

I. *City or town government.* — The people of each town, or county, or city, choose their officers in town, county, or city elections.

II. *State government.* — The people of all the towns or counties in a state choose a governor and other state officers, including a legislature. The legislature makes laws for the state. The legislature is divided into two branches, called the Senate and the House of Representatives.

III. *National government* — The people of all the states choose a President and Vice President of the United States. The national legislature is called Congress. It is divided into two branches, called the Senate and the House of Representatives.

Each state has two senators. They are chosen by the legislature of the state. Each state has in Congress one representative or more than one according to its population. Delaware has one representative, New York State has thirty-four. Territories have no senators. With the exception of Indian Territory and Alaska, each territory sends one delegate to the House of Representatives, who can take part in the debates, but who has no vote.

The government of the United States and of each state, county, town, and city is divided into three departments: —

I. The Legislative Department; that is, Congress, the state legislatures, and the town meetings, which make the laws.

II. The Judicial Department; which includes the Chief Justice of the Supreme Court, and other judges, justices of the peace, and all whose duty it is to apply the laws, to

decide whether or not they have been broken, and to say what the punishment for the offense shall be.

III. The Executive Department; that is, the President, the state governors, the sheriffs, constables, and policemen, and all whose business it is to see that the laws are enforced.

REFERENCES.

DOLE: The American Citizen.
HINSDALE: The American Government.
MACY: Our Government.

57. Geographical Influences affecting American History.

Discovery of the New World. — In the fifteenth century the chief maritime nations of Europe were Spain, Portugal, France, and England. When Constantinople, in the middle of the century, fell into the hands of the Turks, these nations sought to find a new route to India, for by way of Constantinople all the silks, spices, and luxuries of the East had hitherto been carried to the European countries.

Towards the close of the century **Christopher Columbus,** an Italian by birth, was living in Lisbon, Portugal, and engaged in constructing maps and charts. He conceived the idea that by sailing westward he could reach the Indies, and he applied to the governments of Genoa, Portugal, and England for aid to undertake such an expedition, but in vain. After several years of waiting, he succeeded in convincing the king and queen of Spain that his plan was a practicable one, and by them he was equipped with three small ships. (78. 8.) He sailed westward from Palos, Spain, in August, 1492, and on October 12th discovered land. To the island on which he landed he gave the name of San Salvador, an island which

has since been identified as Watling Island, one of the Bahama group of the West Indies.

Cuba and Haiti were also discovered by him before he returned to Spain. These lands received the name of the West Indies, because it was thought that a part of the Indies had been reached by sailing westward.

Statue of Columbus, Entrance Administration Building, Columbian Exposition, 1893.

Columbus made two other successful voyages. On his second voyage he discovered the Lesser Antilles and Jamaica, and on his third, in 1498, he went farther southward to the island of Trinidad and the mouth of the Orinoco River in South America.

Other discoveries followed rapidly upon those of Columbus. In 1499 **Amerigo Vespucci** explored the coast west of Trinidad, and discovered Lake Maracaibo. Here he found a little village built upon piles, and, as it reminded him of Venice in his native country, he called it Venezuela (Little Venice). This name has been retained for the whole country. Amerigo was the first one to declare that it was a new world, and not Asia, that had been reached, and in his honor the land was given the name of America.

It was not till 1522 that the circumnavigation of the earth by Spaniards under **Magellan** convinced every one that the earth is round. What strait reminds you of this man?

Meanwhile the **Portuguese** had reached India by sailing round Africa. By an agreement with Spain, Portugal confined her explorations to the East Indies, Africa, and Brazil.

Spain and Portugal then held command of the south Atlantic and of the highways to the Indies both east and west. The northern maritime nations, therefore, attempted to find a northern highway to the Indies, either by the *northeast passage*, round Norway and along the Siberian coast, or the *northwest passage*, between Greenland and the north coast of America.

Early Settlements. — As the New World was discovered by Columbus who was in the service of Spain, and as the Pope decreed that the land discovered belonged to Spain, the Spaniards were the first people to make settlements in North America. The trade winds carried Columbus far to the south, and **Spanish voyagers** found this the most convenient route to America. They sought gold and silver, and found them in the southern lands which they subjugated. The climate, too, of these regions was much like that of Spain; and so it came to pass that the West Indies, Florida, and the coast of the Gulf around to Mexico were occupied by the Spaniards.

Amerigo Vespucci.

Henry Hudson, in the service of a Dutch company, discovered the river which bears his name, and sailed to the head of tide water, where Albany now stands. In another voyage, in the English service, while seeking a northwest passage, he discovered Hudson Bay and Hudson Strait. Because of his first discovery the Dutch claimed New York; while his second strengthened the claim of the English to North America north of the St. Lawrence basin.

The French, the Dutch, and the English were the next nations to seek possession of portions of the New World.

The French were the most energetic in this enterprise and established colonies near the mouth of the St. John's River in Florida and near the Gulf of St. Lawrence.

The Dutch took possession of the Hudson River, which gave them a good chance to trade with the Indians, and the English took possession of Virginia and New England. The English thus had little opportunity to get into the interior of the country; but for many years this did not matter.

The French were speedily driven out of Florida by the Spaniards, after which they confined their efforts to the country at the mouth of the St. Lawrence and to those regions readily reached by boats passing up that river through the Great Lakes and down the Mississippi.

The country was now claimed by four European powers: in Florida were the Spaniards, in Virginia the English, in New York the Dutch, in New England the English, and in Canada and throughout the great Mississippi valley the French.

The Dutch were a commercial people, and their settlements were trading posts rather than colonies; they were unable to defend themselves when **the English** laid claim to their possessions. After their lands passed into the hands of the English, England held all the Atlantic seaboard from New England to Florida, and to this coast plain it was long confined, owing to the geographical features of the country.

French and English Rivalry. — The St. Lawrence and the Hudson with the Mohawk afforded the only routes from the Atlantic to the interior. The ranges of the Appalachian Mountains prevented the English from moving westward and settling beyond. These ranges are very long, and the water gaps which pierce each range are not opposite one another. On foot or on horseback one could make his way across the labyrinth of ridges, as the native Indians did, but the dense forests with their tangle of brushwood closely knit together by vines, the swamps, the deep ravines filled with fallen

timber and rocks, the cataracts, and steep mountain slopes, all proved effectual barriers to people encumbered with household goods.

They could sail up the Hudson and advance along the Mohawk valley, as they did for a hundred miles, but the land was boggy and densely wooded, and farther west were the tribes of the Six Nations, the most warlike of the Indians.

Hence the English, deterred from moving westward, built up strong colonies along the Atlantic plain. In the many wars between the French and Indians on one side and the English on the other, the mountain ranges prevented any success on either side from being decisive, for it could not be followed up, owing to the great wilderness intervening between the antagonists.

No mountain range hindered the French from advancing from Lake Erie by a short portage to Chautauqua Lake and then down the Alleghany and Ohio to the Mississippi. They established at well-selected sites about sixty trading forts, some of which have since developed into cities, as at Detroit, Fort Wayne, Pittsburg, Toledo, New Orleans.

But the entire number of French settlers in the Mississippi valley was small, and it was not until after the English had far outgrown them in numbers and power that they gained full possession of the mouth of the Mississippi River.

The claim of the French to all the land west of the Alleghanies was met by a rival claim of the English to all land from the Atlantic to the Pacific. These rival claims led to war which finally involved most of the nations of Europe. Pittsburg, at the junction of the Alleghany and Monongahela Rivers, which unite to form the Ohio River, is located at a point which made it of special value both to the French and to the English. Commanding the navigation of the three rivers, it would, in the hands of the English, cut the French off from their most convenient entrance to the Mississippi valley.

By a treaty signed in 1763, all the land east of the Mississippi River was given to England, and all west of that river to Spain.

There were now **thirteen colonies** under the control of England: Massachusetts, New Hampshire, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, and Georgia. These were acknowledged to be independent of England at the close of the Revolutionary War in 1783. To the new Republic then formed was granted all the land east of the

Mississippi and south of the Great Lakes, Canada alone remaining in the possession of the English.

Growth of the United States. — It was foreseen that new states would be formed in the land west of the Alleghanies, hitherto almost unknown to the English, and the Constitution indicated how such states should be admitted.

After the Revolutionary War, many of the people of Virginia and Maryland, tillers of the soil, sought new homes westward. They had already settled in the Shenandoah valley, and moving thence southwestward to the head waters of the Roanoke, they passed over the ridges of the Alleghanies into the valley of the upper Kanawha, up this stream to the head waters of the Ten-

nessee and to Cumberland Gap, which brought them to the fertile district of the Ohio River valley.

In this way Kentucky, Tennessee, and parts of Ohio were occupied, while people from New England moved westward, following the parallels of latitude, and settled in Ohio and neighboring states along the navigable rivers.

The Spaniards were unable to colonize their possessions west of the Mississippi and soon transferred them to France. From France in 1803 the United States purchased all this province, which extended from the Mississippi to the Rocky Mountains and from Texas to British America, for fifteen million dollars. "Probably the largest transaction in real estate the world has ever known." A few years later Florida was also purchased from Spain.

The Mississippi valley was rapidly settled, and by means of flatboats the produce raised was floated down the Ohio and Mississippi Rivers and found a market in the southern cities. There the boats were usually broken up for lumber, for to pole or row them back against the currents was too laborious. The products for northern markets were shipped around to the Atlantic coast, then taken over the mountains and into the Ohio valley. In 1811 the first steamboat was used; the gain in time seemed marvelous; the growth of the settlements was rapid, and this central land soon became cut up into states.

The era of steamboats was followed by that of railroads. These were built with amazing rapidity. The tide of emigration reached the prairies and progress thenceforward was easier and more rapid; there were no forests to subdue, and the open country was quickly settled.

The southwestern part of North America was claimed by Mexico, but Mexico, agitated by civil wars, was able neither to colonize nor to defend her possessions. Texas finally declared herself independent, and in 1845 was annexed to the United States. This brought on a war with Mexico, by

which the United States gained a large extension of territory. See map, page 110.

The discovery of gold in California in 1848 gave a great impetus to emigration to the Pacific coast. Men found their way thither by sailing round Cape Horn. The route across the Isthmus of Panama was also used, as well as the wagon roads across the plains, until at last, in 1869, the first railroad was completed between the Pacific coast and the Mississippi valley.

Such a migration as that which took place to California had never before been known in the world's history. At the close of the year following the first discovery of gold nuggets, over a hundred thousand people had come from neighboring territories, from across the continent, from Mexico, Australia, and the Old World. California became a state, and San Francisco suddenly became the great mart of the Pacific coast.

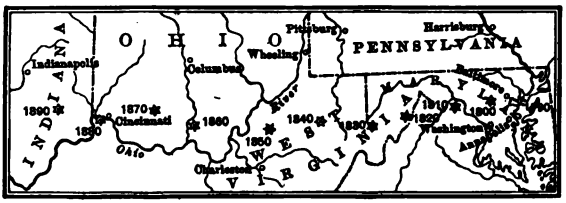
The northwestern corner of the United States, called the Oregon Country, was for a long time claimed and held as joint property by the United States and Great Britain. Near the middle of the century, however, it was agreed that all the land in controversy north of the 49th parallel should belong to Great Britain, and all south of it to the United States. From this region three states have been formed, — Oregon, Washington, and Idaho.

The map on page 110 shows the states that have been formed, and gives the dates of their admission to the Union.

The western states of our country have been thus rapidly settled not only by the emigration of people from the eastern part (usually along parallels of latitude), but also by the arrival of a vast number of immigrants from the Old World. More than sixteen millions of immigrants have come to our country since 1820, and their average annual number during recent years has been over half a million.

This increase of population and other causes have made our

cities grow rapidly. After New York had been founded one hundred and fifty years it had only thirty thousand inhabitants; Cincinnati grew to three hundred thousand in a hundred years, and Chicago gained a million in about fifty years. The gradual movement of the center of population westward with the growth of the west may be seen in the following map. Where was the center of population in 1790? In 1890?



Centers of Population by Decades.

Alaska, which had long been occupied by the Russian Fur Trading Company as a hunting ground, was purchased by the United States from Russia in 1867, and added as a territory.

The other territories of the United States are New Mexico, Arizona, Oklahoma, and Indian Territory.

REVIEW QUESTIONS.

What are maritime nations? Which were the chief maritime nations in the fifteenth century? Which are now the chief maritime nations?

When did the Turks capture Constantinople? What effect on commerce did this capture have?

Who was Christopher Columbus? What plan did he form? What help did he obtain? What success did he achieve? What land did he discover first? When? Why were these islands called West Indies?

Who besides Columbus made discoveries in the New World? Who made the first circumnavigation of the earth? When? What does *circumnavigation* mean?

About what time did the Portuguese first sail round Africa? What agreement as to exploration did Spain and Portugal make? What effect

on other nations did this agreement have? What is meant by a *northeast passage?* By a *northwest passage?* Why did the Spaniards make their explorations along the shores of the Gulf of Mexico and the Caribbean Sea?

What discoveries did Henry Hudson make? What claims were founded on his discoveries?

Where did the Spaniards make their first settlements? The French? The Dutch? The English? What nation gained possession of the Dutch settlements?

How were the English shut out from the interior?

How did the French gain access to the interior?

What cities have developed from early French trading forts? Why did the French locate forts at these points?

Why were the English specially anxious to get hold of Pittsburg?

How did the people of Virginia and Maryland reach the Ohio valley? How did the people of New England and New York reach this region?

What land purchase did the United States make in 1803?

In early times how were the products of the Mississippi valley sent to the southern markets?

When was the first steamboat run on the Mississippi?

When did Texas join the United States? What other gain of territory from Mexico followed?

What effect on the settlement of the Pacific coast resulted from the discovery of gold in California?

When was Alaska purchased?

Of how many states and territories does the United States now consist? What is its area? What is its population? (158.)

What has led to the rapid growth of the cities of the United States? Which cities grew most rapidly between 1880 and 1890? How many cities of the United States have a population of over 200,000? Name the great cities of the Atlantic coast and mention the advantages of each. Name the great cities of the Mississippi valley. The great cities of the West.

REFERENCES.

HIGGINSON: Young Folks Series.

HINSDALE: The Old Northwest.

MACCOUN: Historical Geography of the United States.

AROUND THE WORLD, April, 1894: Ancient Inhabitants of America.

58. The New England States.

(15; 87; 88.)

In what part of the United States are the New England States?

What state is directly west of them? What country is north of them? What part of Europe is directly east of them?

What parallel forms part of their northern boundary? How far north do they extend? What part of the coast has many inlets? Islands?

In which of the five great regions of the United States is New England? (13.)

What mountains are in this section? Which state has no mountains?

In what direction do the rivers of New England run? What is the chief river of this section? Describe it.

What is the average temperature in Maine? Is the climate of New England extreme or equable? Has this section a moist or a dry climate? At what season of the year is the greatest rainfall?

Which state has a peninsula? Which has no seacoast?

Which state is partly in the St. Lawrence basin?

This is the smallest group of states in the Union. Texas alone is four times as large as all the New England States. The average area of a Pacific or a Mountain state is about ten times the average area of a New England state.

The coast in this section was much broken by the action of the ice cap, and it abounds in good harbors. Along the shores, which are bold and rocky on the east, but low and sandy south of Massachusetts Bay, there are many islands.

As these states lie north of the drift line, their soil shows the effect of the great movements of the ice age. It is stony, because the broken rock fragments were left when the ice melted. Beneath the surface soil there is a hard clay except in places where this has been worn away.

The mountains of this section, except the White Mountains, were covered by the ice sheet, and their summits were rounded off by the movement of the ice to the southeast.

Along the drift line on the Atlantic coast from Massachu-

setts Bay southward are many rounded gravel hills and long ridges of earth pushed up by the ice as it moved along.

Where the rock was softer than elsewhere, it was hollowed out. Many of these hollows are now filled with water, particularly in Maine, which is a region of lakes.

When these states were first settled, the soil, poor as it is, furnished farm products in sufficient quantities to supply all the people; now the great agricultural regions of the west send their products eastward, and in sections of New England some of the farms have been abandoned. A great many of the native workmen, as well as the farmers, have emigrated to the west, and French Canadians have come to take their places. The use of petroleum has caused most of the whaling vessels to disappear, for whale oil is no longer burned in our lamps; the introduction of iron vessels has almost put an end to the building of wooden ships, once so great an industry of this section; the manufacturing of iron and steel in the regions where iron and coal are found has almost destroyed this industry in New England; the competing cotton manufactures of the south now threaten the New England manufacture. But notwithstanding all this, New England is increasing in population and wealth.

Manufactures of many kinds furnish business for the greater part of its dense population. What do you know about the manufacturing of woolen and cotton goods in New England? Connecticut is the leading state in the manufacture of hardware. Connecticut makes more clocks and Massachusetts more boots and shoes than are made in all the other states. Machinery, jewelry, rubber goods, and all kinds of small wares are made in southern New England.

There are manufactures of some kind in nearly every town of New England except in the northern parts of Maine, New Hampshire, and Vermont, and there the population is not increasing. Lumbering is a great industry in these northern

states. Dairy farming is extensively carried on. Granite quarries are worked in Maine, New Hampshire, Vermont, and Massachusetts. Marble and slate are quarried in Vermont, slate and lime-stone in Maine, and red sandstone in Connecticut.

Massachusetts, Rhode Island, and Connecticut have more cities, more people, more schools and colleges, more railroads, more ships, more factories, than any other equal area of the United States. Each is a very wealthy state.

From what country did the colonists of New England come? The first permanent settlement was made in Massachusetts. Maine was at first a part of Massachusetts, and Vermont a part of New York and New Hampshire.

Maine. — There are over 1500 beautiful lakes in Maine, covering one-tenth of its surface. Moosehead Lake is the largest.

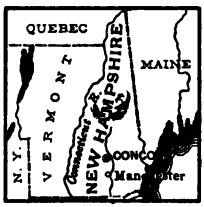
Logs on the Penobscot.

What have you learned about the earlier industries of Maine, about the pine forests, the sheep-raising, the fishing, the cotton and woolen manufactures? Ice cutting and ship building are other industries of the state. (87. 6, 8, 16.)

Portland is the largest city of Maine and one of the chief commercial cities of New England. It has one of the best harbors of the United States. In winter, Quebec and Liver-

pool steamers ply between Liverpool and Portland. (87. 2, 3, 5, 15; 63. 10.)

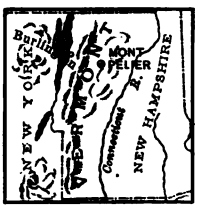
Bangor, on the Penobscot, is the chief lumber market in New England. Augusta is the capital. Bar Harbor on Mount Desert Island is a famous summer resort. (87. 1.)



New Hampshire. — How does this state rank in cotton and woolen manufactures? Paper, boots, and shoes are manufactured.

New Hampshire is noted for its beautiful lake and mountain scenery. Mount Washington, the highest peak of the White Mountains, is over 6000 feet high and affords a more extensive view than any other mountain east of the Rocky Mountains. Throughout this mountain region there are famous summer resorts. (87. 4, 7, 9, 11, 12, 14.)

Although this state has only 18 miles of seacoast, it has at Portsmouth a good harbor. Upon islands near Portsmouth is located one of the navy yards of the United States. Here are dry docks and workshops where government ships are built or repaired or furnished with supplies, and where marines are stationed.



Manchester, the largest city, manufactures fire-engines and cotton goods. Concord is the capital.

Vermont. — Vermont is chiefly a grazing state. What rank has it as a sheep-raising and wool-manufacturing state? More maple sugar is made in Vermont than in any other state.

The Green Mountains of Vermont are much lower than the White Mountains of New Hampshire. Lake Champlain is a beautiful sheet of water separating Vermont and New York and extending into Canada. On this lake is situated Vermont's largest city, Burlington, which has an extensive lumber trade.

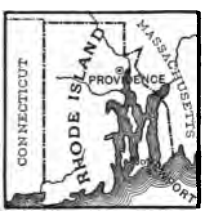
Montpelier is the capital. (87. 10, 13.)

Massachusetts. — What rank has Massachusetts as a manufacturing state? What have you learned about its manufacture of cotton and woolen goods, iron and steel, foundry products, clothing, leather? About its tobacco, fish? (88. 6, 7, 10, 11, 12.)

To Massachusetts belong the islands of Martha's Vineyard and Nantucket.

Through the Hoosac Mountains in the western part of the state a railway tunnel five miles long has been constructed, one of the longest in the world.

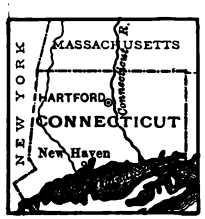
What have you learned about Boston, the capital of Massachusetts? How large a city is it? In and about Boston happened most of the important events of the beginning of the Revolution. Bunker Hill is within the city limits. Lexington and Concord are but a few miles away. (71. 6, 16; 88. 1, 4; 66. 8; 68. 13; 76. 4.)



Worcester, the second city in size, and Lowell and Fall River are large manufacturing cities. (70. 1, 7, 9; 71. 3, 14, 16.)

Rhode Island. — Rhode Island is the smallest state in the Union. What have you learned about its industries?

It has two capitals, Providence, the second city in New England and a great manufacturing center, and Newport, a noted summer resort. (88. 5, 8, 9, 14.)



Connecticut. — Connecticut has good farming land in its river valley. What are the products of this valley? How does Connecticut compare with other states in the manufacture of cotton and woolen goods, iron and steel?

Hartford, the capital, is situated on the Connecticut River at the head of navigation. New Haven is the largest city. (88. 2, 3, 13.)

59. The Middle Atlantic States.

(15; 89; 90; 91; 92.)

Which is the most northern of these states? The most southern? What parallels bound them?

In what regions of the United States is this section? In what basin is the northern part? The eastern? The western?

What section west of them? Northeast of them? South of them?

How wide is the Atlantic plain in this section?

How wide is the Appalachian system?

Which states border on the Great Lakes? Which has many lakes within it? Where is Delaware Bay? Chesapeake Bay? For what product is Chesapeake Bay famous?

What are the great rivers of this section? Describe each.

What have you learned about the average temperature of northern New York? What is it in Virginia?

What do you know about the winds in this part of the United States? About the rainfall? How does the amount of rain in this section compare with that in the states north of it?

This section includes the states along the coast from New England to North Carolina, together with Pennsylvania, West Virginia, and the District of Columbia. It is the chief commercial section of the United States.

Through this section runs the Appalachian system of mountains. In the northern part of New York the mountains of this system are called the Adirondacks and are noted for their picturesque scenery and wild and rugged character. Between the Mohawk and Delaware Rivers are the Catskill Mountains. Both the Adirondack and the Catskill Mountains afford delightful summer resorts for the people of the large cities. (89. 7, 8, 10.)

In Pennsylvania, the eastern ranges of the Appalachian system are called the Blue Ridge Mountains, and the western the Alleghany Mountains. There are also smaller parallel ranges.

What part of this section was once covered by the ice cap?

How does the soil of this part differ from that south of the drift line? Long Island is a great gravel bank pushed up by the ice cap.

Trace the Delaware River. Notice that the Lehigh River runs through the mountains and opens a way to the coal mines. (29; 91. 1.)

What rivers of the Atlantic system have their sources west of the Appalachian highlands? The Hudson River is connected by canals with Lake Erie, Lake Ontario, Lake Champlain, and the Delaware River. Trace these canals. Why were they constructed? What influence on the commerce of New York do you think they have? (25; 82. 9.)

The portion of this section in the St. Lawrence basin is devoted to agriculture; that on the Atlantic slope chiefly to manufacturing and commerce; the part in the Mississippi basin to mining and lumbering.

What facilities for commerce, foreign and domestic, have these states?

New York. — What have you learned about the production of wheat, oats, rye, in New York? Of pears and apples? Of iron, oil, and salt? About its manufactures of cotton and woolen goods, clothing, leather, iron, and steel? Its dairy products are greater than those of any other state.

In what respects does New York rank first among the states? Who settled New York?

Besides its picturesque mountain scenery, this state has beautiful falls, rivers, and lakes. (89. 5, 8, 10; 24.)

No other falls have so immense a volume of water pouring over them as flows over Niagara Falls. The constant movement of the water has slowly worn away the rock over which it rushes, until the Falls are now about seven miles back from where they originally were. This tremendous water power is nearly equal to all the water and steam power

used in the United States; a small part is now being used to generate electrical power. (89. 4, 5, 6; 75. 9.)

There is an almost continuous natural waterway between New York City and the great cities of Canada; hence along this line many of the battles of the French and Indian wars and of the Revolutionary War were fought. Many forts were built, among them Fort Crown Point on the shore of Lake Champlain, Fort Ticonderoga, where Lakes Champlain and George nearly meet, Fort William Henry, at the upper end of Lake George, and others along the Hudson. (89. 1; 90. 4.)

The Hudson is one of the most beautiful rivers in the world. It is a steamboat ride of 150 miles from Troy, at the head of navigation, to New York City, at the river's mouth. A short distance below Troy, Albany, the capital of the state, is passed. The capitol is one of the finest buildings in the country. (90. 2; 77. 7.) Next, the Catskills are in sight, with the great hotels showing like little white dots on the mountain sides. At Rondout is the terminus of the Delaware and Hudson Canal, which brings coal from Pennsylvania. From here ships and barges carry coal to the New England ports. Poughkeepsie is half way to New York. Here the boat passes under a high bridge on which railway trains cross the river. Then the Highlands are passed, the mountains coming to the very water's edge; and here, at a bend in the river, is Westpoint, the site of the United States Military Academy, where young men are trained to be officers in the army. At Sing-Sing is a famous state-prison, close to the water's edge. At Tarrytown, Washington Irving lived; and in the surrounding country are the scenes of many of his stories. Then, for fifteen miles, the right bank of the river is bordered by the perpendicular cliffs called the Palisades, and finally New York City, the metropolis of the country, is reached. (89. 3, 9; 70. 5; 71. 7; 75. 4.)

Ausable Chasm, in northeastern New York, and Watkins Glen, in southern New York, are deep rifts in the rocks through which rivers flow. In the west these rifts would be called canyons. (89. 2.)

What have you learned about New York City and Brooklyn? What cities are commercially a part of New York City? (90. 1, 5, 7, 9.)

Buffalo and Rochester are large cities. (90. 8.) Where is each located? At Syracuse salt is manufactured. (90. 3, 6.) Saratoga Springs has valuable mineral springs, and is a famous summer resort.

The island of Long Island is a part of New York State.

New Jersey. — A line drawn from Jersey City to Trenton, the capital of the state, would divide New Jersey into a northern, hilly, undulating country having large, important manufacturing cities, and a southern sandy plain, well adapted to gardening and to raising peaches and small fruits. The market gardens of this part of the state supply the millions of inhabitants of the cities near New Jersey.

New Jersey ranks first among the states in silk manufactures. What have you learned about its production of wheat, tobacco, iron? Its woolen, cotton, steel, and pig-iron manufactures are very important.

Newark and Jersey City are the largest cities. Long Branch and Atlantic City are noted seashore resorts. (91. 5, 10, 11.)

Pennsylvania. — Pennsylvania is called the "Keystone State," because of the thirteen original colonies six were on each side of Pennsylvania, and thus this state had the same relative position as the keystone of an arch.

The mountain chains of the Alleghany system have their greatest width in this state. The scenery among these mountains is very picturesque, as the views in Part II., page 91 show you. Where the Delaware River cuts through the Blue Mountains is the beautiful Delaware Water Gap, two miles long. This gorge is the work of the river during ages. (91. 3.)

East of the mountain chains the land is rolling, and near the rivers quite level. West of the mountains is a broad plateau with valuable timber lands.

This is the first state of the Union in mineral productions, and the second in value of manufactures and in population.

What proportion of the coal supply of the United States

comes from Pennsylvania? What have you learned about this state's production of wheat, rye, oats, tobacco? About the rearing of sheep and cattle in this state?

Besides the iron and steel manufactures, there are extensive manufactures of machinery, lumber and its products, sugar and molasses, flour, leather, carpets, cotton and woolen goods, and ships.

Entrance to a Coal Mine.

The capital of Pennsylvania is Harrisburg.

What do you know about Philadelphia? What took place at Independence Hall? (76. 1, 2, 7; 91. 7, 9.)

Pittsburg is an important manufacturing city, for it has the four great advantages of coal mines, gas wells, iron mines, and rail and river transportation. What manufactures would you expect here? Can you give any reason why Pittsburg makes great quantities of iron rails, while Providence, R.I., makes fine tools? (91. 4; 28.) Across the river from Pittsburg is the large city of Allegheny.

Delaware. — Delaware has a soil and climate especially adapted to peaches, apples, and small fruits. (92. 14.) Its manufactures are many, especially of rolled iron, iron and wooden ships, gunpowder, flour and meal, and leather.

Dover is the capital. Wilmington is the only large city.

Maryland. — In Maryland, Chesapeake Bay, like Narragansett Bay in Rhode Island, extends far inland and furnishes

fine facilities for commerce. The Chesapeake and Ohio Canal extends from Georgetown to Cumberland. Another canal connects the Chesapeake and the Delaware Bays.

Tobacco, wheat, corn, dairy products, peaches, small fruits, and vegetables are the staple products of the state. The mineral products are of great variety. Cotton goods are manufactured.

Annapolis is the capital. Here is the United States Naval Academy, where young men are trained for positions in the navy. What have you learned about Baltimore? (92. 8, 4.)

District of Columbia. — The District of Columbia originally consisted of 100 square miles extending along both sides of the Potomac. It now contains only the 64 square miles ceded to the United States by Maryland, the portion on the south side of the river having been returned by Congress to Virginia. Here is Washington, the capital of the United States, located at the head of navigation on the Potomac. (71. 8; 76. 3, 11; 77. 6; 92. 6, 7; 32.)

The people of this District have no voice in the election of their own officers or of those of the general government. The District is under the management of three commissioners, appointed by the President. Its laws are made by Congress.

Virginia. — Virginia is called the "Mother of Presidents," for in this state seven presidents of the United States were born, — Washington, Jefferson, Madison, Monroe, Harrison, Tyler, and Taylor.

Virginia was the earliest settled of the English colonies.

How does Virginia rank among the states in the production of wheat, corn, tobacco, apples? What do you know about its coal and iron mines?

The Albemarle and Chesapeake Canal is the last of the series of ship canals which make it possible for small vessels to go from Long Island Sound to the sounds of North Carolina without venturing into the open sea.

The land of Virginia descends to the sea in terraces from the west. In the southeastern part is Dismal Swamp, a valuable lumber region.

In a limestone country there are often underground rivers which dissolve the rocks and make caves. Limestone is one of the softer kinds of rock, and dissolves slowly in water. Virginia has two of the most beautiful caves in the country, — Luray Cave and Weyer's Cave.

Sometimes part of the roof of a cave falls in and the remainder makes a natural bridge. In the western part of the state is the Natural Bridge of Virginia, a beautiful arch 200 feet above the little river which flows into James River. (92. 2, 12, 13.)

Finely situated on the Potomac is Mount Vernon, the home of Washington. His house contains many relics, and not far from the house is his tomb. (70. 2.)

Richmond, the capital, is the largest city of the state. (92. 5.)

West Virginia. — West Virginia was separated from Virginia and made a state in 1863.

Its surface is mountainous and much like that of western Pennsylvania. (92. 3.) The soil is exceedingly fertile. What do you know about the production of wheat, corn, tobacco, in this state? About sheep-raising? About its forests?

It is rich in coal, oil, and salt.

Wheeling, the largest city, has blast furnaces and iron foundries. Charleston is the capital.

Where the Potomac cuts through the Blue Ridge is Harper's Ferry, and you can see by the picture (92. 11, 15) how beautiful the scenery is here.

60. The Southeastern States.

(16; 93; 94; 96.)

Name the Southeastern States. In what part of the United States are they? What two sections north of them? What section west of them?

What parallel bounds this section on the north? What part of Africa is directly east?

Which of these states has no seacoast? Which two have but little seacoast? Which state has most seacoast?

In which three of the regions of the United States are the Southeastern States? How wide is the Atlantic plain in these states? Where is the southern end of the Appalachian system?

What is the amount of rain in this section? At which season does most rain fall? What part is within the trade-wind belt? Is the climate extreme or equable?

The surface of these states is low and level except where broken by the southern extremity of the Appalachian system. From this point the land slopes east, south, and west.

Much of the land along the coast is swampy. (93. 5.)

Not far from the coast are many long, low islands, parallel to the mainland. How far north do these islands extend? How far south? Do they assist or hinder navigation?

Back from the low coastal plain the land is higher and sandy. A belt of yellow pine, thirty to ninety miles in width, skirts the plain. What materials do these pine trees furnish?

What is cultivated on the low coast lands? What is grown on the islands? (93. 10.)

These states, together with the Southwestern States, raise more cotton than is raised in all the rest of the world. Which three states produce the most? (94. 3, 8, 11.)

What products are raised along the Gulf? All these states produce large crops of peaches, Georgia raising more than any other state in the Union. All except Florida raise large quantities of corn, and all except Florida and South Carolina have

large flocks of sheep. Sweet potatoes are an important product.

Manufactures, especially of cotton, are increasing, but agriculture is the leading industry.

North Carolina. — The coastal plain in North Carolina has valuable pine forests and excellent farming land; the central and western part is rich in mineral products.

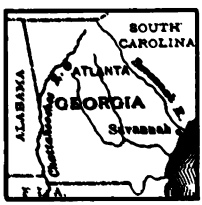
Between the ocean and Albemarle and Pamlico Sounds are long, narrow, sandy islands which form dangerous shoals. Part of the Great Dismal Swamp extends into North Carolina. Swamps cover nearly 4000 square miles in this state.

Mount Mitchell, one of the peaks of the Black Mountains, in the western part, is the highest peak in the country east of the Rocky Mountains. (93. 1, 8.)

Raleigh is the capital, and Wilmington the largest city.

South Carolina. — South Carolina is called the "Palmetto State," because it has many palmetto trees. All the products of the south flourish here, but rice and cotton are the chief products. What is the principal manufacture of the state?

Except in the swampy and rice-growing regions, the climate is mild and healthful. In the pine lands there are noted health resorts.



Charleston is an important seaport. (93. 6; 30.) It has a fine harbor.

Columbia is the capital.

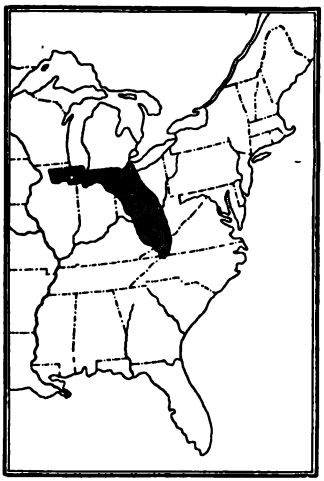
Georgia. — Georgia is rich in minerals. Marble, iron, building stone, and slate are abundant. Coal is found in the northwestern part of the state. What are its chief agricultural products? What fruits are raised? What have you learned about its forests and their products?

What is the chief manufacture of Georgia?

In the region of the foot-hills there are many beautiful falls and cataracts (93. 9.)

Atlanta, the capital and largest city, is an important railroad center. (93. 4; 64. 9.)

Savannah is built upon the first high land the settlers found as they sailed up the Savannah River. (67. 4.)



Comparative Size of Florida.

Florida. — Florida is one of the largest states east of the Mississippi. What other one is a little larger? Its great extent may be seen by the following map.

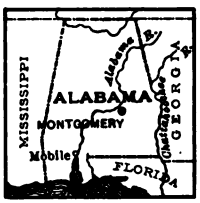
Along the Atlantic coast of Florida there are long sand bars, and at the south there is a continuous coral reef, broken now and then by channels. The name given to this reef is the Florida Keys. The word key comes from the Spanish word *cayo*, which means island. Can you tell why there are many Spanish names in this state and none in New England?

Some of the islands are covered with a tropical vegetation.

The southern part of the peninsula is the product of coral animals, and was once separated from the mainland, as the Florida Keys now are. In this great tract, called the Everglades, there are shallow channels of water extending in all directions. Wooded islands and grass regions, swamps, lakes, and beautiful springs abound in Florida.

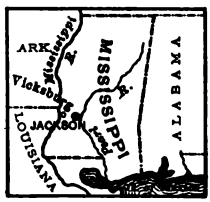
Florida is a peninsula, and, therefore, has a climate different from the other portions of eastern North America.

This peninsula projects southward into the warm Gulf, and has the Gulf Stream flowing on its eastern shores. Its winter climate is therefore remarkably mild. Its summer season is long, but of moderate temperature. From these causes it becomes a pleasant winter resort, a place of escape from the severe winters of the north, a land of orange groves, of pine-apples and cocoanuts; a tropical region, the only one in the United States, except southern California. (94. 1, 2, 4, 6, 10; 79. 8, 9, 10.)



Tallahassee is the capital. Jacksonville is the largest city. Name the oldest town. (94. 7, 9.) Key West is the chief market for sponges. (94. 5; 34.)

Alabama. — The northern part of Alabama is hilly and contains coal and iron. Alabama ranks second among the states in the amount of iron produced, and has important iron and steel manufactures. The central part of the state is agricultural and the southern part is crossed by a timber belt. (93. 11.)



Picking Cotton, Mississippi.

Birmingham is a manufacturing city. Montgomery is the capital. Mobile is the largest city. (93. 3, 7.)

Mississippi. — There are no mountains in this state. From the highest part in the northeast the land slopes gradually to the Gulf and the Mississippi. A broad low ridge extending north and south through the center of the state forms a water-

shed. Why are the low lands between the bluffs and the Mississippi so fertile? (94. 12, 13.) For what product is this state specially noted? It has important woolen manufactures. Jackson is the capital

Tennessee. — Eastern Tennessee is mountainous, and has valuable mines of coal, iron, zinc, and copper, and marble quarries. Central Tennessee is undulating, and is a blue-grass region, devoted to wheat, corn, hemp, tobacco, and live stock. Western Tennessee is low and level, the soil is alluvial, and is devoted to the cultivation of cotton and tobacco. What is the chief manufacture? What fruit is extensively cultivated?

The Cumberland River is navigable for large steamers to Nashville, the capital of the state, and much farther for smaller boats. (96. 2.) Describe the course of the Tennessee River.

Memphis is one of the important cotton markets of the country. From the summit of Lookout Mountain above Chattanooga there is a fine view of the Tennessee River and surrounding country. (96. 1, 8.)

61. The Southwestern States.

(16; 95; 98.)

How far south do these states extend? In what region of the United States are they?

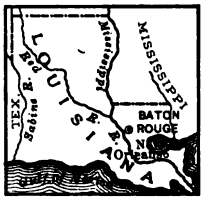
What two large branches of the Mississippi are in this section?

Which extends farther south, Texas or Florida? Which of the Southwestern States are coast states? Which is inland?

Three states and two territories constitute this group.

The only mountains are the Ozark Mountains in the northwestern part of Arkansas. What minerals do they contain? Northwestern Texas and Oklahoma are high and dry. Describe the climate of this section.

Louisiana. — Louisiana has many bayous, the name given in this state to a sluggish stream or a side outlet of a river. The northern and western parts of the state are upland having fertile land and heavy forests. Which is the only state that is more heavily wooded?



The delta of the Mississippi is bottom land and is exceedingly fertile. How has this land been made? More sugar-cane and rice are raised in Louisiana than in any other state. What are other important products of the state?

What have you learned about New Orleans? At this city the river is very wide, and great levees have been built to keep it from overflowing the city. A large proportion of the inhabitants of the city, and, indeed, of the delta, are creoles, — people of French or Spanish descent, who speak the French language. (95. 2, 8.)

Every spring New Orleans has a carnival, and the illustration (95. 9) shows you a procession which takes place on *Mardi Gras*, the day before Lent.

Baton Rouge is the capital. (95. 12.)

Arkansas. — What mineral is obtained in this state? What fruit is raised extensively? What are the other important products?

The surface of this state slopes from the Ozark Mountains in the western part to the low land in the eastern part with its lakes, bayous, and swamps. There are many warm and mineral springs in Arkansas, the most famous being at Hot Springs; here there are about a hundred springs ranging from 100 to 160 degrees in temperature. (98. 2.)

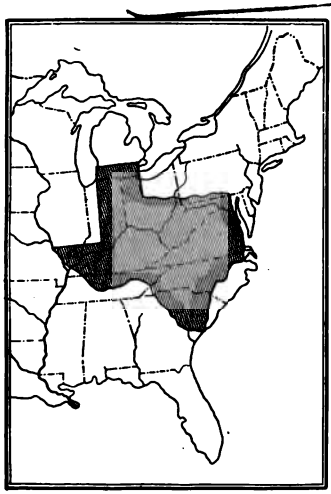
Little Rock is the capital and largest city. (98. 9.)

Texas. — Texas is the largest state in the Union. How

much larger it is than any of the eastern states may be observed from the map below. The land rises gently from the Gulf towards the northwest. In the western part of the state is a barren plateau called the "Staked Plain," because the only plants there found are the yuccas, whose stems stand like stakes over the plain.

What minerals are found in Texas? Vast herds of cattle, sheep, and swine are reared. What cereals are raised? How does the state rank in the production of cotton and of sugar-cane? Of peaches?

The capital of the state is Austin. Dallas, San Antonio, and Galveston are the largest cities. (95. 6.)



Comparative Size of Texas.

Indian Territory. — This territory has been set apart by the government as a home for various tribes of Indians. Here a definite area, called a Reservation, has been given to entire tribes or parts of tribes removed from other parts of the country.

The money due the tribes, or Nations as they are called, from the sale of their lands, is held in trust by the United States government, and the interest is paid annually to the treasurer of each nation.

The five civilized tribes — the Cherokee, Chickasaw, Choctaw, Creek, and Seminole Nations — have large reservations.

Their population numbers about 175,000, less than one-third of whom are Indians. Many negroes and white men have become citizens of the nations under their local laws. White

men who have married Indian women are counted as belonging to the tribe, and share in the property.

Indian Territory is not organized into a territorial government as the other territories are. Each tribe has its own chief, treasurer, council, etc., and a bureau of Indian affairs is appointed by the United States government.

Farming and stock raising are the principal industries.

The land is held in common, but a citizen of the reservation may use whatever land he can fence in. The most enterprising Indians have large farms which they lease to white or black men. The less civilized Indians live among the hills and on the timbered lands.

Coal is mined on the reservation of the Choctaw Nation, and gold and silver are known to exist in the territory.

The Cherokee Nation has a reservation about as large as the state of Massachusetts. It has a good government, and excellent schools. Tahlequah is the chief town. (95. 4.)

The Creek Nation has its capital at Okmulgee. On this reservation is Muscogee, the chief commercial town; here is located the United States court for the territory.

The Choctaw Nation has the largest reservation. Many thousand white men are engaged in mining coal.

The Chickasaw Nation has the largest population, but there are five times as many white men in the reservation as red.

The Seminole Nation is the wildest and much the smallest of the five nations.

Oklahoma Territory. — Oklahoma Territory was separated from Indian Territory in 1890. Most of the land in this territory is prairie, and the climate is so equable that products of northern and of southern states can be profitably raised. (95. 11.) Guthrie is the capital.

62. The East Central States.

(17; 96; 97.)

Name the East Central States. In what region are these states?

In what drainage basin is Michigan? In what two basins are each of the other states?

Name the Great Lakes. What rivers connect these lakes? Where is Green Bay? Saginaw Bay? Lake St. Clair? Name the states separated by the Ohio River. By what sections are the East Central States bounded?

These states lie east of the Mississippi and north of latitude 36° 30′. In the northern parts of Wisconsin and Upper Michigan there are elevations over a thousand feet high; along the Mississippi and Ohio Rivers are bluffs, some of those in Indiana being called knobs; the rest of the surface of this section is quite level. The soil is of remarkable fertility.

The untimbered grassy plains of the Mississippi basin are called prairies, a French word meaning meadows, a word which has been used since the time when all this region was French territory. The surface is usually rolling and comparatively free from stones, and where uncultivated is covered with long grass. No trees grow upon it except in scattered clumps. This soil is adapted to raising the different kinds of grain, especially wheat and corn.

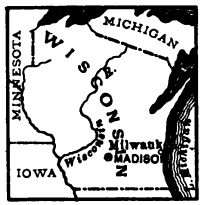
What do you know about the temperature and rainfall of this section?

There are great stores of natural wealth here. Where are there pine forests? Where are coal and iron found? Where are there mines of copper ore? Where are there salt wells? Where is lead found? Zinc?

The cereals are raised in all these states. Which ones raise the most wheat? The most corn? The most oats?

Wisconsin. — The soil of the northern part of this state is of sand and clay, well adapted to the pine and hard-wood forests; the fertile southern part is an agricultural region.

Besides hay, wheat, corn, and oats, much barley and rye are raised in this state. Many cattle are reared and the dairy products of this state are of great importance.



The most important manufactures are of lumber, flour, malt liquors, leather, and meats. The fisheries are valuable.

There are many beautiful lakes in this state. Notice the picture of the Dalles of the St. Croix. (97. 3.) Dalles is a name given to the strange shapes of earth and rocks left by the action of the river in wearing its channel through rocks.

Milwaukee is the largest city of the state, and one of the chief commercial cities of the country. It has a fine harbor on Lake Michigan and carries on an extensive lake commerce. It has large manufactures, particularly of machinery; and is noted for its beer, its tanneries, and its smelting works.

Madison is the capital of the state.

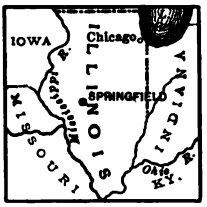
Michigan. — Michigan consists of an upper and a lower peninsula. The upper peninsula is the mineral region, and is wild, rocky, and picturesque. (97. 13; 75. 13.)

On the southern shore of Lake Superior are the famous "Pictured Rocks," cliffs of different colors worn into strange shapes by sand and wind and water. Near them is the scene of Longfellow's poem, *Hiawatha*.

The southern peninsula is the agricultural region. Michigan ranks first among the states in its products of iron ore, gypsum, salt from brine wells, lumber, and fresh-water fish. It is second in production of copper. What proportion of the iron of our country comes from Michigan? What fruit is largely raised? (97. 9, 10, 12.)

Detroit is the largest city. It has a fine harbor. Its manufacturing industries are many. Grand Rapids is noted for the manufacture of furniture. Lansing is the capital. (97. 11; 82. 4; 41.)

Illinois. — Illinois, the "Prairie State," is one of the most level and best watered states of the Union. It is the third state in population. In this state are raised more horses and more wheat, corn, and oats than in any other state. (97. 7).



What minerals are found in Illinois? What manufactures are carried on?

What have you learned about Chicago? As late as 1830 there were only a few shanties and rude huts where now the city of Chicago covers a greater area than any other city of the world. It is the largest pork-packing, grain, lumber, and live-stock market in the world. (97. 5, 6, 8; 76. 6.)

Springfield is the capital of Illinois.

Indiana. — Indiana is popularly known as the "Hoosier State." It is chiefly a farming state. What mineral products has it?

In the southern part of the state there are limestone caverns; the best known is Wyandotte Cave, nearly as large as Mammoth Cave. See page 138.

Indianapolis, a great railroad center, is the capital. It is supplied with natural gas for heating and lighting, from the gas field north of it. Evansville is the second city in size. (96. 5, 3.)

Ohio. — Many years ago there lived in this region a race of people known as the Mound Builders; the mounds and their contents of pottery and ornaments are the only relics of this strange people. These mounds are numerous throughout the Upper Mississippi and the Ohio valleys.

Ohio is, next to Illinois, the most populous state of this section. It is one of the rich states in the Union, ranking among the first in agricultural and dairy products, and in manufactures of earthenware and

brick. Which state manufactures more iron and steel? It is also the second state in the Union in the value of its stone

Mound at Marietta, Ohio.

quarries. What other mineral products are found here? What fruit is raised in great quantities?

Cincinnati and Cleveland are commercial centers and great manufacturing cities. Cleveland is especially noted for ship-building. Columbus is the capital. Toledo and Dayton are important cities. (96. 7, 13; 71. 10; 37.)

Kentucky. — Kentucky is a plateau sloping gradually from the mountains on the east to the rivers on the west and northwest.

In the limestone areas are many caverns. Mammoth Cave, near the Green River, is the largest cave in the world. Some of its chambers have beautiful stalactites, which look like marble icicles, hanging from the ceiling, and stalagmites, which point upward from the floor. Sometimes a stalactite and stalagmite join and form a column of beautiful or fantastic shape. (96. 6, 9, 11, 12.)

Kentucky is an agricultural and grazing state, for the soil is very fertile. In the north central part is a large area called the Blue Grass region, where the continual decay of the blue limestone makes the soil exceedingly rich.

This state is celebrated for its fine horses. It ranks first among the states for the production of tobacco, hemp, and flax. What proportion of the tobacco raised in the United States comes from Kentucky? Its coal fields, iron-ore beds, and stone quarries are important. One-third of the state is covered with forests.

Louisville is a thriving city and the largest tobacco market in the United States. Frankfort is the capital. (96. 4.)

63. The West Central States.

(17; 98; 99.)

Name the West Central States.

In what region are they? By what sections are they bounded? Name the three eastern states of this section. The four western. What two states are separated by the Red River of the North?

What great river flows through this section? In what direction do the tributaries of the Missouri from the west run? From the east? What does this indicate as to the slope of the land? What part of this section is in the Hudson Bay basin? To what drainage system do the lakes on the northern boundary of Minnesota belong?

What is the annual rainfall along the head waters of the Mississippi? Is there more or less rainfall farther west? Farther east? Farther south? Is the climate more or less extreme than that of New England? At what season of the year is the chief rainfall? How does the climate compare with that of the East Central group?

Which of these states produce the most corn? Oats? Wheat? Where are the most sheep reared? Cattle?

Minnesota and North Dakota are crossed by the timber belt.

The three eastern states of this section are settled and well developed, and the natural resources of those farther west are being rapidly improved.

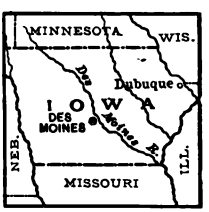
Minnesota.—What three great river systems almost meet in Minnesota? This state is famed for its lakes of all sizes, numbering nearly 10,000 in all. (98. 11.)

More than half the state is timbered, while the rest is prairie; hence farming and lumbering are the main industries. (98. 7.)

Flour and lumber are the chief manufactures. The products of foundries and machine shops are important. Iron is mined in this state. In the western part is the red pipestone region; it was of this red stone that the Indians made their pipes of peace. (98. 6, 8.)

Minneapolis is the largest city. For what is it noted? St. Paul is the capital. What led to the founding of these cities? (98. 13, 14, 10; 49.) Where is Duluth?

Iowa. — Iowa resembles Illinois and Indiana more than it does the other states of this section. (98. 15.) It is entirely a prairie state. What cereals are raised extensively in this state? In what products does it take the lead?



It ranks second in the production of flax. What mineral is mined?

Nearly all the trees of the state have been planted by the settlers. There are many large saw mills where logs are sawed that have been rafted from Minnesota. Why are they sawed here?

Des Moines, the capital and largest city, is an important railroad center. (98. 1.)

Missouri. — Missouri is the most populous state west of the Mississippi, and St. Louis, its chief city, is the largest in the Mississippi valley. What have you already learned about this city? (98. 4, 5; 75. 5; 45.)

The productions of the soil and of the mines of this state are of great variety. Besides its coal, iron, building stones, useful clays, and lumber, this state yields two-

thirds of the zinc produced in this country. It is chiefly, however, an agricultural state, producing the wheat and corn of the northern states, and the cotton, flax, tobacco, and grapes of the southern states. The natural transportation facilities of this state are unsurpassed. (98. 12.)

Kansas City is a large, flourishing city and an important railroad center. Jefferson City is the capital.

North Dakota. — In North Dakota there are still large and unbroken prairies. (63. 5; 64. 12.)

The winters are long and severe. Prairie breezes render the summer nights cool and comfortable.

The soil is exceedingly fertile, especially in the Red River valley. Here there are large wheat farms, one farm often containing two or three thousand acres. (99. 3.) The cattle ranches are also on a large scale.

In the western part of the state is a region called by the Indians the Bad Lands, because bad for traveling; this is a rough but picturesque country, where colored rocks have been worn by the action of water into fantastic shapes. (99. 4, 13.)

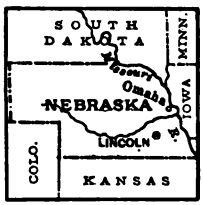
The capital of the state is Bismarck.

South Dakota. — The Bad Lands of South Dakota, which extend into Nebraska, is a desert region with canyons, walls, and mounds of white earth.

Like North Dakota, the chief industries are agriculture and stock raising. In the Black Hills gold, silver, tin, and coal are mined. (99. 1, 2, 14.)

The state is destitute of trees, and sections of land called tree claims have been given to settlers for a very small amount of money upon the condition of their planting groves there. Why are trees so important? Pierre is the capital.

Nebraska. — The eastern part of Nebraska has a rich soil which yields large crops of grain and hay. Beets are raised in large quantities, and the making of beet sugar is becoming an important occupation. (99. 11, 7, 8; 63. 14.)



Omaha is a large city having extensive smelting works and railroad repairing shops. (99. 12.) Lincoln is the capital.

Kansas. — In which part of Kansas is the greatest rainfall? In which part are the most settlements?

Kansas is a great plain broken by narrow river valleys. In what direction does it slope?

In Kansas large quantities of corn, wheat, oats, and hay are raised. Coal, lead, and zinc are the minerals most mined. The salt, gypsum, and oil areas are large. Manufacturing in the cities is increasing. (99. 6, 9, 10.)

Kansas City is the largest city, separated from Kansas City, Missouri, only by the state line. Topeka is the capital.

64. Mountain and Plateau States.

(18; 95; 100; 101; 102; 81.)

In what region are these states? How is this section bounded? Name from north to south the four states in the eastern tier of this section. Name the three states lying west of these states. What other state in this section? Describe their surface.

What river in part separates Arizona and Idaho? What is the shape of Idaho? Where is Great Salt Lake?

What part of this section is in the Mississippi basin? What part drains into the Gulf of Mexico? What, into the Gulf of California? What, into the Pacific Ocean? What, into interior basins?

Is the climate of these interior basins moist or dry? Do you think the same is true of all interior basins? Why?

Montana, Wyoming, Colorado, and New Mexico are crossed by the Rocky Mountains and the lower ranges near them, called foot-hills. Idaho, Utah, Nevada, and Arizona are the plateau states, crossed also by lower mountain spurs.

This whole region is elevated, and the level portions are several thousand feet higher than the sea. What is the effect of the altitude upon the climate? The air of this section is very dry. When is the rainy season?

In this section the rivers run in deep-walled canyons. Many of the rivers are dry the greater part of the year; when rains occur the water washes the decayed portions of the rocky surface into the channels, and the mass of sand and sharp bits of stone borne along by the swift current is constantly cutting the channel deeper.

The Pacific Highlands consist of several parts: (1) the Rocky Mountains; (2) the Great Basin, crossed by several short ranges; (3) the Northern or Columbian Plateau; (4) the Southern or Colorado Plateau; (5) the Sierra Range or the Cascade Range; (6) the Coast Range. Within these highlands are several peaks that reach 15,000 feet in height, and the general level of the region is at least 6000 feet high. This is higher than any mountain summit in eastern North America except two or three.

The Northern Pacific Railroad crosses the mountains at a height of 6000 feet. The Central Pacific crosses the Sierra Nevada at an elevation of 7000 feet, and the height of South Pass through which the Union Pacific Railroad runs is 8000 feet. Trace on the map the parts of the Pacific Highlands and the roads referred to. (12–13.)

The Plateau States include the great interior basin of the continent. This Great Basin is a triangular region lying between the Wasatch Mountains and the Sierra Nevada. What have you learned about its rivers? There are many fertile valleys in the northern part of the Great Basin, but the southern part is hot and sterile.

The soil of these states must be irrigated in order to be productive.

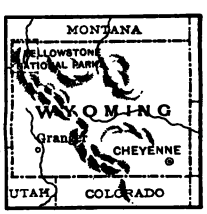
Mining of gold, silver, quicksilver, lead, iron, copper, and other minerals is the chief industry. In which states is the most gold mined? In which, the most silver? The most copper? The most coal? Which states raise many sheep?

In these states some of the grandest and most interesting scenery of the world is found. The air is so clear that mountains may be seen many miles away. In this part of the country one hears of a "butte," a low mountain or a high ridge rising abruptly from the surrounding country, and of a "mesa," a tableland bounded by cliffs.

Montana. — Montana is larger than all the New England States together with the state of New York. It is the third state of the Union in size. Its farming lands, made fertile by irrigation, cover more territory than the average eastern state; its grazing lands, where great herds of cattle, horses, and sheep feed on the bunch-grass, more than the state of Illinois; its forests, more than those of Michigan. One-fifth of its area is mountainous. (100. 6, 11, 12.)

Montana ranks first in the production of copper, second in that of silver, fourth in that of gold, and fifth in that of lead.

The course of the Missouri in this state is through very picturesque scenery. The "Gate of the Rocky Mountains," where the river breaks through the mountains, is a grand gorge nearly six miles long. A series of rapids and cascades, called the Great Falls of the Missouri, marks the limit of navigation from the Gulf of Mexico. (100. 1.)



Helena is the capital and largest town. Butte is another flourishing mining town. (108. 8.)

Wyoming. — There is very little farming in this state. Stock raising is the leading industry. The mineral wealth is con-

siderable, but coal is the only mineral as yet mined to any great extent. Cheyenne is the capital. (100. 4, 7, 9.)

Yellowstone Park. — In the northwestern part of the state, extending a little into Montana and Idaho, are 4000 square miles which form the Yellowstone National Park, and contain more natural wonders than any other region. (81.)

Ages ago there was a deep rocky basin on the eastern side of the Great Divide of the Rocky Mountains. There the earth's crust broke, and melted lava surged up from below, filling the basin and running over its sides upon the surrounding country. When this lava flow ceased, its surface cooled, leaving a black, solid crust to protect the fiery interior. The snows of winter melted into numerous brooks; some of the water penetrated the cracks in the lava crust and became underground streams, which soon came in contact with the fires beneath. The waters were changed to steam, whose explosive force tore up the rocks, till, hard as they were, they were crumbled to soft powder. Then came the ice age, and the movement of the ice continued the work of tearing away the lava blocks and of wearing deep valleys across their surface. When the ice melted, the water cut great gorges or canyons for its bed, or remained as lakes in the old depressions, or reached the fiery rocks beneath to be constantly hurled back again as steam and boiling water. Grass and flower seeds were brought by winds and birds from the valley below; these took root and grew, and trees, chiefly the red fir and mountain pine, sprang up.

This wonderful region was for a long time known only to the buffalo, elk, bear, porcupine, and beaver, the wild goose, the eagle and other birds. John Colter, a hunter, was the first white man to cross this region, and he reported what he had seen; he told about the strange geysers, some of which send forth boiling water 250 feet high, which explode after longer or shorter intervals, some of them coming from

high mounds which have been made by the deposits from the water, others issuing directly from the level ground; about the blue ponds of boiling water, hot enough to boil fish; about the springs whose hot water poured over terraces beautifully colored while all the land around was white and desolate; about the basins of bubbling red, white, yellow, and brown mud called "paint pots"; about the sulphur fumes which came from holes in the forests; about the beautiful Yellowstone Lake, thirty miles long, filled with trout; and about the clear Yellowstone River which a few miles from the lake passes over a fall a hundred feet high, and still farther away plunges over a cliff 260 feet high (the Lower Falls of the Yellowstone) into the Grand Canyon of the Yellowstone, where it rushes, foaming, between steep walls of bright red, yellow, gray, and purple colored rock cut into fantastic shapes.

These stories seemed too wonderful to believe. In 1871 the United States geologist sent out a party for systematic exploration, and Congress, the following year, set apart this whole region as a "public park or pleasuring ground for the benefit and enjoyment of the people."

Colorado. — Colorado is in the center of the Rocky Mountain region. One-third of the eastern part is desert land. Most of the remainder is mountainous and exceedingly rich in minerals. There are also fine farming and grazing lands. Where the land is irrigated, enormous crops are produced. Because of its altitude, pure air, and dry climate, the state is a great health resort.

Within this state are the highest peaks of the Rocky Mountains in the United States, and the natural scenery is grand (101. 1, 2, 3, 8, 10, 11, 12, 13, 14; 74. 11; 75. 12.)

More than 40 peaks are over 14,000 feet high. Among the mountain ranges there are large "parks," which are broad valleys once the beds of lakes. From the dome of the capitol at Denver one can see

three of the most noted mountain peaks,—Long's, Gray's, and Pike's Peak. A few hours by rail from Denver brings one to The Garden of the Gods and Monument Park, where are tall columns of stone worn by water into strange shapes. Near by are Colorado Springs, a noted health resort, and Manitou, where a railroad ascends to the top of Pike's Peak. (101. 4, 6, 7.) Not far from Colorado Springs are the Cripple Creek gold mines.

None of the rivers of Colorado are navigable, and many flow through wonderful canyons, some of them from two to five thousand feet deep. Mineral springs and hot springs are numerous.

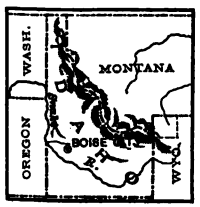
What have you learned about Denver, the capital of the state? Leadville is a famous mining town. (101. 5, 9.)

New Mexico. — New Mexico is a territory. Its surface is a lofty tableland sloping southward. In the southeast is a continuation of the Staked Plain of Texas, waterless and apparently barren, but capable of yielding crops if irrigated. The territory is rich in minerals and precious stones; the leading industries are stock raising and the mining of silver, gold, and coal.

Santa Fé is the capital and one of the oldest towns in the country. (95. 7; 65. 8, 6; 68. 2.)

New Mexico formerly belonged to Mexico. Mexican manners and customs still prevail, and the Spanish language is spoken.

The Indians of New Mexico live in villages called pueblos (the Spanish name for village). In a pueblo the adobe houses are built close together, and even on top of one another to a height of five or six stories. The entrance to a house is through a hole in the roof; there are no stairways, but ladders lean against the outer walls and from the hole in the roof to the floor. The Zuñi pueblo is one of the best known. (95. 1, 3, 5, 10.)

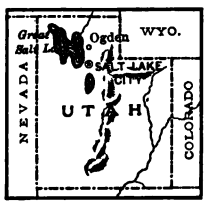


Idaho. — Idaho has a sandy soil, which can be made productive only by irrigation. The southeastern part is a vol-

canic region where streams suddenly disappear and become subterranean. Here are "sinks," or places where the roofs of caves have broken through. (100. 3.)

There are numerous waterfalls in the state. The Snake River, after a succession of cascades, makes a plunge of 200 feet over the Great Shoshone Falls, one of the grandest falls in the world. (100. 10, 2.) Boise City is the capital.

Utah. — Utah is crossed by a range of mountains called the Wasatch. East of this range there are mountain spurs, and the soil is hard and clayey; west of the range there are many valleys. West of Great Salt Lake there is an alkaline desert.



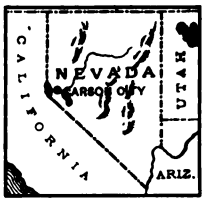
Much of the soil is alkaline, and so little rain falls that the people have been forced to construct an extensive system of reservoirs, canals, and ditches to irrigate the land. Agriculture is an industry more important in this state than mining. (102. 1, 3, 4, 10, 12.)

Long ago, long before white men had come to America, and perhaps before man had appeared on the earth, the basin at whose bottom lies the Great Salt Lake was occupied by a freshwater lake as large as Lake Michigan, and having an outlet through Red Rock Pass into Marsh Creek and to the Shoshone and the Columbia Rivers. This lake has received the name of Lake Bonneville. Its surface was at one time about 1000 feet higher than Salt Lake now is. It cut down its outlet nearly 400 feet, but finally the rainfall that supplied its waters became too scant, and it ceased to have an outflow. Since that time it has gradually dried away until all that remains of it is Great Salt Lake, Utah Lake, and some smaller lakes.

Great Salt Lake is still drying away. It is now shallow, and will become smaller if it does not entirely disappear. Its water is very salt and buoyant. Can you tell what has made it salt? Many thousand tons of salt are taken from it annually. (102. 5, 8.)

Twelve miles from the lake is Salt Lake City, the capital

of the state. This is the great city of the Mormons, whose chief settlements are in Utah.



On Temple Square are the Mormon buildings, — the Temple, a fine granite structure, and the Tabernacle, an oval building with a roof or dome that is the largest in the country. (102. 2.)

Nevada. — Nevada is in the Great Basin. A large part of it is a desert. It ranks fifth in the production of gold and silver. Carson City is the capital. (100. 13, 14, 15, 16.)

Effect of Irrigation on Arizona Desert.

Arizona. — On the plateau of this territory are many mountain ranges whose peaks are very high. (102. 11.)

The Colorado River and its tributaries which drain the territory have all cut deep canyons for their beds. What have you learned about the Grand Canyon of the Colorado? (102. 7.) Phœnix is the capital.

In the recesses of the cliffs of the Colorado River and of its eastern tributaries there are remains of strange dwellings once occupied by people called the "cliff dwellers." Sometimes in a small niche half-way down the perpendicular face of a canyon there is a single house; and again in larger recesses there is a village of many rooms. The stones which form the walls are set in mortar made from the adobe clay. (64. 5, 16.)

65. The Pacific States.

(18; 80; 103; 104.)

In what region of the United States are these states? Is the climate extreme or equable? In what season does most rain fall? Is there more rain at the north or the south? In what direction are the prevailing winds? Which part has a very dry climate? Which part a very moist climate? What effect on vegetation do these extremes have?

What country of Asia is directly west of the Pacific States?

What have you learned about the forests of this section? What have you learned about two kinds of trees peculiar to California?

What is the effect of the Japan current and the westerly winds upon the climate of the Pacific States?

Name the Pacific States. What great river in this section? What states does it separate in part? Where does this river rise? What great tributary from the south? (104. 4, 6, 7.)

How many states are there bordering the Pacific Ocean? How many border the Atlantic?

Washington. — One hundred years after the discovery of America, Juan de Fuca discovered this northwestern region for the Spaniards. Two hundred years later still, an American captain sailed into and explored the great river, to which he gave the name of his vessel, Columbia. On account of his voyage, the United States claimed, by right of discovery, all the land drained by the river; the British also claimed this region because of Vancouver's exploration made several years later. These rival claims were part of the Northwest Boundary dispute that was settled in the middle of this century. (1846.)

The Cascade Mountains divide the state into two parts. Mount Rainier is the highest peak of the range. (104. 10, 12.) Eastern Washington consists of rolling plains and valleys originally covered with sage-brush and bunch-grass. By means of irrigation, this land has been made exceedingly productive. The bunch-grass plains are fine grazing regions. The rivers of this section abound in falls and rapids, and this water power

will soon be used for manufacturing purposes, as it already is at Spokane Falls. (104. 2.) The largest lake of the northwest is Lake Chelan, seventy miles long. (104. 3.)

Western Washington has fertile alluvial soil along the rivers and in the reclaimed marshes of Puget Sound.

Puget Sound has some of the finest harbors in the world. Two counties of Washington consist entirely of islands in this Sound.

Olympia is the capital of the state. Seattle and Tacoma are the largest cities. (104. 9, 11, 13.)

Oregon. — What three ranges of mountains cross Oregon? Mount Hood is the highest peak of the state. (104. 1.)

Among the Cascade Mountains is Crater Lake, the deepest freshwater lake in America. It fills the crater of an extinct volcano and is surrounded by bluffs 2000 feet high. (104. 5.)

The mountains are well covered with timber, and some of the valleys are exceedingly fertile. The fisheries and canneries, especially of salmon, are very important.

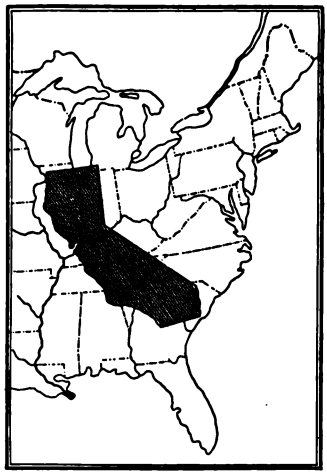
Portland is the largest city. It is the western terminus of the Northern Pacific Railway and has a regular steamship line to Sitka, Alaska. (104. 8.)

Salem is the capital.

California. — The northern boundary of California is in the latitude of Cape Cod, and its southern boundary in that of Charleston, South Carolina. For its size compared with some of the eastern states, see the map on next page.

Why has California a mild and even climate? The climate of the region near the coast from San José to Los Angeles is delightful; it is marred in summer only by the dust which, for perhaps weeks at a time, is not laid by a single shower.

California is crossed by two mountain ranges, and between their chains and spurs lie the valleys, most of them remarkably fertile, but a few of them barren. The California Valley is 400 miles long and from 40 to 70 miles in width. (103. 5.)



Comparative Size of California.

The most remarkable of all the valleys is the Yosemite. (80.) This lies a mile below the level of the surrounding country, and is six miles long and from half a mile to a mile wide. A river winds in beautiful curves through the valley, huge granite rocks project into it, and wonderful falls, comparatively narrow, but the highest in the world, leap down the cliffs. The Yosemite Falls (80. 3) is the most beautiful of the falls. Mirror Lake (80. 1) is aptly named.

In the southeastern part of California is Death Valley, so named because a party of immigrants perished there from thirst and starvation in 1849. It was once a lake, and is 400 feet below sea-level. This valley is said to be the hottest spot on earth in summer. On the eastern side are rich borax deposits.

Alfalfa Harvest, California.

California is noted for its rich mines of precious metals, its fine fruits, and wines. It sends to all parts of the United States large quantities of wine, grapes, oranges, lemons, peaches, apricots, pears, and plums. What part of the gold of our country comes from this state? (103.)

San Francisco Bay is connected with the ocean by a strait called the Golden Gate. Steamships ply between San Francisco and the Hawaiian Islands, Australia, Asiatic ports, and the cities on the western coast of the American continent. (43.)

Most of the early settlements in California were made by Franciscan monks, and their most northern "mission" they named San Francisco, after the founder of their order, Saint Francis.

Several thousand Chinese inhabit the Chinese Quarter of San Francisco, where they have their own stores, theaters, and houses of worship. (103. 12.)

What have you already learned about San Francisco? (103. 6, 10.)

Los Angeles and Oakland are the cities next in population. Sacramento is the capital. (103. 13, 15.)

Alaska.— Alaska is nearly one-sixth as large as all the rest of the United States. It includes a large area on the mainland, and many islands in Bering Sea and the Pacific Ocean. It has a coast line greater than that of the Atlantic seaboard. From what country was this territory purchased?

A Placer Mining Town.

The Coast Range of North America extends into Alaska and onward into the Alaskan Peninsula and Aleutian Islands, which stretch toward Asia for a thousand miles. Magnificent glaciers are found among the mountains. (83. 2; 64. 2.)

In this range is Mount St. Elias, covered with ice and snow from base to summit, though the foot-hills are timbered.

The principal river of Alaska is the Yukon. Six hundred miles from the coast it is over a mile wide. It is navigable

for small steamboats for 1500 miles. It is 2000 miles long, and empties into Bering Sea through a delta. Its drainage basin is the second in size on the continent.

An Alaskan Chief.

The Yukon Basin, except near the coast, has extensive forests. In the region about Sitka, the capital of the territory, are dense forests containing tree trunks especially adapted for masts and spars.

There are other large rivers in Alaska about which but little is known.

The great Japan current is borne to the Alaskan shores. The prevailing winds in summer are from the south and are warm and moist. As they blow upon the mountains they become cooled and envelop the land in mists and clouds, which give a heavy rainfall in southern Alaska.

The northern and interior portions are very cold. In the extreme northern part of Alaska there are several weeks in winter when the sun does not rise, and several in summer when it does not set. Point Barrow is the northernmost point.

An Eskimo Child.

The inhabitants of Alaska are engaged in hunting the fur-bearing animals and in fishing. Salmon is the principal fish caught and exported.

Alaska's population consists of Eskimos, Indians, and the Aleuts of the Islands, a people more gentle and industrious than the Eskimos, whom they somewhat resemble. There are also a few half-breeds and white people. (83. 1, 15, 3, 7, 11, 13, 16; 63. 12; 65. 13; 68. 9.)

A strange sight in this territory are the "totem poles" of the Indians with their peculiar carvings. These poles serve the same purpose as coats-of-arms among the people of Europe. (83. 10.)

REVIEW QUESTIONS UPON THE UNITED STATES.

Which of the cultivated plants of the United States are natives of America? Which have been imported?

The United States has three coasts; which is the longest, and which the shortest? Does the larger part of the United States, exclusive of Alaska, lie east or west of the Mississippi River? Dividing the United States by the Mississippi River, which side is of greater importance? Will it always remain so? Give reasons for both answers. If the United States were cut up into states the size of your own, how many would there be? Which states have no seacoast? Which border the Atlantic? Which border the Gulf of Mexico? Which border the Pacific? Which border the Great Lakes? Which border Mexico? Name from west to east the states which border Canada.

Which states are crossed by the meridian of Washington? Which is the central state of the Union? Name five state capitals east of the Mississippi that are in about the latitude of Philadelphia.

Which states lie partly in the Atlantic basin, and partly in the basin of the St. Lawrence? Which state is wholly in the St. Lawrence basin? Which states are partly in the St. Lawrence basin and partly in the Mississippi basin?

Why are the winters milder at Puget Sound than around Lake Superior? Which state has the warmest climate? Is there more snow in Portland, Maine, or in Portland, Oregon?

Name five bays on the Atlantic coast. Is the Mississippi longer than when discovered by De Soto? Over what waters may a vessel go from Providence to Nashville? Name ten states that have rivers of the same name as the state.

Which carries more water to the sea, the Mississippi or the St. Lawrence? On which side of the Mississippi are its largest tributaries? Why? Name the river valleys that cut through the Appalachian Mountains. Which of the Great Lakes are called upper and which lower? Why are there salt lakes west of the Rocky Mountains?

Which are the five leading manufacturing states? The five leading mining states? In what staple articles is the United States ahead of all other countries? Name the states noted respectively for each of the following exports: coal, salt, granite, lumber, fruit, vegetables, dairy products, cotton, boots and shoes, clothing. What countries take our surplus grain? Meat?

Of all the great cities of the Mississippi valley, which has the greatest natural advantages for manufacturing and which for commerce? What point on the lakes has most advantages for manufacturing iron? Are our rivers relatively as important as formerly for commercial purposes? Why? North of the Ohio the principal cities on the banks of the Mississippi are on the right bank. Is this true south of it? Can you give a reason for this in the commerce of the bordering country? Compare New York and San Francisco as to means of access to the interior.

Mention the six most important seaports of the United States. Name the chief cities and locate each.

Through what places would you pass in a pleasure trip from New York to San Francisco? Why would you want to stop at places you mention in this route?

Where in the United States do the farmers meet with difficulty on account of too little rain? Where do they have trouble from the worn-out character of the land? Where from swamps? Where from river overflows? Where from alkali in the soil? Where from mountains and rocks? Where from stones in and on the land? Where are there the most market gardens? Where is the hay crop of most value? Cattle are raised mainly for beef and for dairy products. In what parts of the United States is dairying an important industry? Dairying, except to furnish milk for cities, is not carried on where the population is very dense nor where it is very scarce. How do you account for this?

Where are the small farms? Where are the large farms? What are raised on the small farms? What on the large farms?

Where is cotton grown? Corn? Wheat? Oats? Grapes? Potatoes? Tobacco? Rice? Sugar-cane?

For references see pages 56 and 167.

POLAR REGIONS.

66. Arctic Lands.

(9; 11; 83.)

THE Arctic Ocean is surrounded by an almost continuous belt of islands and continents. This belt is broken by three waterways connecting the Arctic Ocean with the Atlantic and Pacific Oceans; the narrowest of these is Bering Strait, between Asia and North America; the second is Davis Strait, between North America and Greenland; the largest is the open sea between Greenland and Norway.

The Arctic Ocean.

Northeast of the continent of North America are Baffin Land and Greenland. North of Europe lie Nova Zembla and the archipelago of Spitzbergen. North of Asia the islands are few and small.

Many countries, Kamchatka, Alaska, Labrador, southern Greenland, situated as far south as sixty degrees or even fifty degrees, have a climate and productions of an Arctic character, while the coast of Norway has a much milder climate.

The treeless wastes called the barrens in America, and tundras in Siberia and European Russia, have many features in common: both slope to the northern shores, both are scantily wooded and covered with grass. Marshes and shallow lakes abound. The low northern shores are the home of sluggish streams and numberless inlets from the frozen seas. (83. 6.)

These plains on both continents are thinly populated. They would be solitary and silent in summer, except for the birds and insects. In winter drifting snows and howling tempests sweep over the untrodden and monotonous wastes.

Arctic Lands.

They are larger in extent than the whole of Europe. A belt of forest fifteen to twenty degrees in width encircles them

67. Greenland.

Greenland was discovered by the Northmen in the tenth century, but abandoned by them in the fourteenth century and forgotten. It was re-discovered by Davis and occupied by the Danes.

Greenland and Iceland belong to Denmark.

Of Greenland only a small portion of the land at the southern extremity and a narrow strip along the eastern and western shores are visible; the rest is covered by an ice field, tolerably smooth and level except at the edges. From the edge of this ice field icebergs break away. (83. 5.)

The chief settlements are on the western coast. The most important one is Godhavn. (63. 1.)

Trade of Greenland. — Every colony on the coast of Greenland is regularly visited by two or three ships which bring provisions for the few Danish inhabitants and various kinds of goods for the natives. These vessels arrive in July and leave in August. There exists at this season a brisk trade between the principal ports and the trade centers in their vicinity. The smaller places send in their stores of sealskin and seal blubber by small sailing vessels. The blubber is melted down by the colonists into oil, and this with skins forms the chief return cargo of the Danish vessels.

An Eskimo Woman.

The European importations are then distributed to the remoter inhabited regions. This work continues until September, when the increasing cold and storms suspend all trade until January. Then the winter ice sheet is so firm and wide in extent that traffic by the use of dog sledges becomes practicable.

Eskimos. — The inhabitants of Greenland, Labrador, northern America, and northeastern Asia are the Eskimos. No

uncivilized race ranges over a wider space. What did you learn in the Introductory Geography about the Eskimos? (83.)

68. Antarctic Regions.

In the Northern Hemisphere the land almost surrounds the Arctic Ocean; in the Southern Hemisphere the ocean completely surrounds the land. (9.)

All we now know about the South Polar region is that there are dense pack-ice and great vertical glacial walls which seem to bound the continental area, for here and there traces of land have been seen beneath the ice, and occasionally a mountain or volcanic peak. It is a land of desolation. No land animal, no trace of vegetation, not even a lichen or a piece of seaweed, has been seen there. Even in midsummer no signs of life exist, and the summer here is quite different from the summer in Arctic regions. Fossils have been found, however, which show that a more genial climate once existed in these regions.

Two groups of land are known. One, south of Australia, is called Victoria Land. On this there are two huge volcanoes; one, called the Terror, is extinct, but the other, Erebus, lights up with its red smoke the polar night.

South of South America there is another Antarctic land.

REFERENCES.

HARTWIG: The Polar World.
HAYES: The Open Polar Sea.
GREELY: Three Years of Arctic Service.
GREELY: Handbook of Arctic Discoveries.
PEARY: My Arctic Journal.
WRIGHT: The Ice Age in North America.
CHAUTAUQUAN, December, 1895: Iceland and its People.
COSMOPOLITAN MAGAZINE, August, 1893: Icebergs.
GEOGRAPHICAL JOURNAL, April, 1894: Across Iceland.
COSMOPOLITAN, July, 1894: Antarctic Continent.

DOMINION OF CANADA.

69. General Treatment.

(14; 84; 85; 86.)

Extent. — With the exception of the peninsula of Alaska on the northwest, the northern part of North America, from the United States to the Arctic Ocean, belongs to Great Britain. This British possession is but a little smaller than all Europe. The distance across the continent along the Gulf and River of St. Lawrence and Great Lakes, over the prairie land and Rocky Mountains, and on to the Pacific, is three thousand miles. (84. 1, 6; 85. 1, 2, 3, 5, 7, 8.)

Name. — When Cartier discovered the St. Lawrence River in 1535, he heard the Indians call the villages *Kannatha;* thinking this their name for the entire country, he adopted the name of Canada.

Government. — The Dominion of Canada is divided into seven provinces. The island of Newfoundland, together with the coast of Labrador, is a British colony independent of Canada.

Each province has its own parliament and lieutenant-governor, and sends its representatives also to the general parliament at the capital, Ottawa. The executive power is in the hands of a governor-general appointed by the Queen of England. (77. 10.)

Rivers and Lakes. — What have you learned about the rivers of British America? The Red River of the North rises in the low hills that on their southern slopes bear the head waters

of the Mississippi. (85. 4, 6.) What have you learned about the connection between the Red River of the North and the Mississippi?

Once there existed a great lake in the valley of the Red River of the North. Into this lake the sediment of the tributary rivers was poured, making the lake bottom level and covering it with a soil fertile in its elements. This lake was larger than all the great lakes of America combined, and its old beaches can be traced for hundreds of miles. This valley is now one of the largest and most fertile former lake bottoms of the world, and is a fine region for wheat. Lakes Manitoba, Winnipeg, and Winnipegosis occupy what once were deep places in this great lake. To this ancient lake has been given the name of Lake Agassiz, in honor of Louis Agassiz, a distinguished naturalist of the United States.

Cutting Lumber.

Hudson Bay is a vast shallow sea in the northern plain. In this great plain are the mighty Mackenzie and the "swift-flowing" Saskatchewan.

Products. — When Canada was first settled by Europeans a great part of it was covered by unbroken forests. Much of the land has, of course, since been cleared, but the forests of pine, maple, oak, and birch are still the great wealth of the country. The cutting of timber employs many thousand men.

In the short summer the farmer raises fine crops of wheat,

oats, and barley. Good crops are raised as far north as the Peace River country in latitude 60°.

Wheat is successfully grown at Fort Simpson, latitude 62°, longitude 122° west. Fort Simpson is farther from St. Paul than St. Paul is from New Orleans. This shows the great breadth of the wheat-growing belt in North America. Barley and potatoes are grown at Fort Good Hope as far north as the Arctic Circle.

The mineral resources are very great. Coal fields exist, but they have as yet been worked only near seaports and along the Canadian Pacific Railroad. Gold, silver, copper, and iron abound.

There are extensive fisheries along the coasts, and in the great lakes and rivers.

Railroads. — The Canadian Pacific Railway crosses the Dominion from ocean to ocean. This gigantic enterprise has united the Canadian provinces commercially as well as politically.

The Grand Trunk Railway connects Montreal with Chicago and with Portland, Maine. Another road connects the Canadian Pacific with Minneapolis and St. Paul. There are 15,000 miles of railroad in the Dominion.

Canals. — Many canals have been built to avoid the rapids in rivers. What have you learned about the canals built around the rapids of the St. Lawrence? (86. 2, 7.)

Population. — The population of the Dominion is about five millions, one-third of whom are French, and the others mostly of British origin. There are 100,000 Indians and half-breeds in the provinces and in the vast region of the northwest.

70. Provinces of Canada.

Maritime Provinces. — New Brunswick, Nova Scotia, and Prince Edward Island form the maritime provinces of Canada. Near them is the independent colony of Newfoundland.

New Brunswick lies between Maine and the Gulf of St. Lawrence. Forests and fisheries form the wealth of this province. St. John, on the River St. John, is the largest city. Seventy miles up the river is situated the capital of the province, Fredericton. (86. 4.)

The peninsula of *Nova Scotia* and *Cape Breton Island* forms another province. Why is its climate milder than that in the inland provinces?

Maritime Provinces.

Its fisheries rank next in value to those of Newfoundland. It has also rich coal mines. There are fine harbors along its coasts, and Halifax, its capital, has a secure harbor large enough to contain all the navies of the world. (86. 1.)

Prince Edward Island is separated from New Brunswick and Nova Scotia by Northumberland Strait. Farming and fishing are the chief occupations on this island. Charlottetown is the capital. (86. 6.)

Newfoundland has bold and rocky coasts, deeply indented by bays. The interior is barren. Summer on this island is very short and hot. Fogs are frequent. The long winter is of great severity. Polar bears, foxes, beavers, wolves, and wild reindeer are found here. In the spring many seals are brought down from the Arctic Ocean on fields of floating ice and are killed for their skins. The wealth of the island consists in its fisheries. What have you learned about the Banks of Newfoundland?

Each nation owns the sea off its own coast for three miles. Beyond that is the "high sea," the common property of all nations. The great fishing banks are beyond the three-mile limit, and fishermen of any

nation have the right to fish on them; but they may not cure their fish on the near Newfoundland or Canadian shores, nor go ashore there to buy bait except by treaty permission of these governments.

The capital of Newfoundland is St. John's.

The coast of the mainland north of Newfoundland, known as Labrador, is under the government of Newfoundland. It is one of the most desolate regions of the world, inhabited chiefly by Eskimos. There are many fishing stations here in summer. (86. 3, 8; 63. 4.)

Quebec. — The two most important provinces of Canada are Quebec and Ontario, formerly called Lower Canada and Upper Canada. These are separated by the Ottawa River.

The province of Quebec lies on both sides of the St. Lawrence River. The river valley is very fertile, but the climate of the northeastern part is so severe as to render the land nearly useless for cultivation. About three-fourths of the population are French.

Quebec, the capital of the province, is a foreign-looking city. Its walls and fortifications, narrow, steep streets, and curious old French houses are very interesting. It is one of the most strongly fortified places in the New World. (84. 2, 3.)

Thousands of logs, fastened together in huge rafts, are floated down the St. Lawrence to Quebec. On these rafts the lumbermen live during the journey. They build huts on them with hearths of earth for cooking. Thus the rafts are floating villages. When they reach Quebec they are taken apart, and the logs are sent to saw-mills.

Montreal is the largest and most important commercial city in British America. It is built on an island in the St. Lawrence, and its fine stone docks are visited by ships from all parts of the world. About how far is it from the ocean? (84. 7; 71. 9.)

The St. Lawrence River is here two miles wide, and it is spanned by a famous railway bridge, a great iron tube resting on twenty-four piers, the longest tubular bridge in the world.

Where is the Saguenay River? This river is noted for its scenery It flows through a rift in the rock over fifty miles long, and the perpen dicular cliffs on either side are 1000 to 2000 feet high. (84. 5.)

Ontario. — Westward from the Ottawa River, north of the St. Lawrence and the Great Lakes, is Ontario, the richest and most populous province of the Dominion.

The northern part is thickly covered with forests. The southern is one of the most productive grain regions of the world.

Toronto is the capital and largest city. (84. 4, 8.)

Manitoba. — Manitoba, called the "Prairie Province," has grown very rapidly in population, for its soil is exceedingly fertile, producing large crops of wheat and affording excellent pastures for sheep and cattle.

The capital is Winnipeg, which is rapidly becoming the center of trade for the great wheat region of western Canada.

British Columbia. — British Columbia lies between the Rocky Mountains and the Pacific Ocean, and includes the adjacent islands of the Pacific. The mountains of this province are covered with forests of pine and fir trees; valuable gold fields exist along the Fraser River, and on Vancouver Island are coal fields. Fish canning is an important industry.

The capital, Victoria, is built upon a fine harbor on Vancouver Island. (84. 9.)

The Northwest Territory. — In 1670 the Hudson Bay Company was formed, and given a charter by the king of England, which entitled it to three million square miles of land in North America and the sole right to trade with the Indian tribes. For two hundred years this company owned all this land. In 1869 this land was sold to the Dominion of Canada; a portion of it is now known as the Northwest Territory. (72. 11; 73. 4.)

The Hudson Bay Company still exists and has more than a hundred "forts" or trading stations scattered over the land. To these stations Indians and trappers bring the skins of beavers, otters, foxes, wolves, reindeer, moose, and other wild

animals to exchange them for guns, powder, clothing, etc. The furs are then sent to the Columbia River, or to Montreal, or to Fort York, and then on to England. (86. 5, 9, 10, 11, 12.)

REVIEW QUESTIONS.

How much of North America belongs to Great Britain? Of what two colonies does it consist?

The Dominion of Canada has how many provinces?

Compare the government of Canada with that of the United States.

Describe the great plains of northern Canada.

What have you learned about Mackenzie River? Nelson River? St. Lawrence River? Red River? Fraser River? Tell about Lake Agassiz. How far north is wheat raised?

Where is the Canadian forest belt?

What is said of the Canadian Pacific Railroad? Of the Grand Trunk?

Why is Montreal a more thriving city than Quebec?

In what countries of Europe do the fishermen of Newfoundland find a market for their fish?

Where is the Welland Canal, and what is its commercial importance?

Why is the most populous part of Canada next to the United States?

REFERENCES.

KING: The White Hills.
BIRD: Life in the Rocky Mountains.
ROOSEVELT: The Winning of the West.
GILBERT: Lake Bonneville.
WHITNEY: The United States.
PARKIN: The Great Dominion.
RALPH: Our Canadian Frontier.
BUELL: America's Wonderlands.
BAEDEKER: Canada.
HARPER'S MAGAZINE, April, May, and June, 1893.
HARPER'S MAGAZINE, March and April, 1895.
THE CENTURY, May, 1895: Arid America.
COSMOPOLITAN MAGAZINE, August, 1894: Alaska.
SCRIBNER'S MAGAZINE, March, 1894: Florida.
GEOGRAPHICAL JOURNAL, January, 1894: Cliff Dwellers.
NEW ENGLAND MAGAZINE, January, 1895: Alaska.
THE CHAUTAUQUAN, June, 1894: Canada.

71. MEXICO.

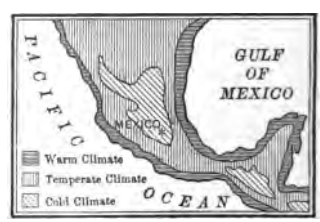
(14; 105; 106.)

Extent and Relief. South of the United States lies Mexico, equal in area to about one-quarter of the United States without Alaska. What two peninsulas belong to Mexico?

Mexico and United States.

The main part of Mexico is a lofty plateau 4000 to 8000 feet above sea-level. The northern part is a continuation southward of the desert region of Arizona and New Mexico. It is traversed by mountain ranges, and descends in terraces to the lower land along the coasts. (106. 12.)

Along the coast of Yucatan are low lands, swampy and unhealthful; behind them plains, dry and barren; and in the interior, fertile and healthful highlands with dense forests. Scattered throughout these forests are the ruins of large cities and of great edifices that once were palaces and temples of rare beauty. (105. 5, 9.)



Climatic Regions of Mexico.

The Tropic of Cancer crosses Mexico near the center. The low, hot, and moist coast lands, called the hot lands, have tropical products, — cotton, indigo, sugar-cane, bananas, and other fruits. In summer the decay of the rank vegetation gives rise to malaria and sometimes to yellow fever, the scourge of this part of the country. On the moun-

tain slopes at an elevation of from 3000 to 6000 feet is the temperate region, where a genial climate, magnificent scenery, and semi-tropical vegetation unite to form the "Paradise of Mexico." Here the cereals are cultivated. The higher altitudes receive the name of cold lands, but except on the snow-clad summits of the mountain peaks the climate is mild. The greater part of this land is valuable only for pasturage. (79. 7.)

Diagonally across southern Mexico extends a band of volcanic peaks. Orizaba and Popocatepetl are the highest. (106. 6, 4.)

Products. — Among the exports of Mexico are cattle, dye-woods, cabinet-woods, hides, animals, hemp, vanilla, coffee, and tobacco. The chief products of the soil are rice, corn, barley, wheat, and beans.

The great wealth of Mexico, however, consists in minerals. There are important coal, iron, lead, copper, and petroleum areas, which have been but little developed. Gold and silver mines have long been worked, and more silver is now produced than in any other country except our own. (106. 1.)

Population. —Mexico has a population of about twelve millions. The people of the ruling race are mainly Spanish, but they number less than a fourth of the population, the rest being Indians and people of mixed white and Indian blood. (105. 1, 3, 4, 7, 8, 10; 106. 13.)

The Aztecs. — Soon after the West Indies had been discovered a Spaniard whose name was Cortez made an expedition to the mainland.

In Mexico he found a race of people very different from the native West Indians. This people, called the Aztecs, had come to Mexico from the north in about the fourteenth century. There they had found the Toltecs, who were far advanced in civilization, were good farmers, metal-workers, road-makers, and builders of great cities and immense temples. Some of the ruins of these temples remain even to this day. (106. 3.)

The Aztecs built grand cities and magnificent pyramids. So powerful were they that it was only after many bloody battles that the Spaniards conquered them.

The tools and weapons of the Aztecs were of bronze, or stone, or of hard lava. They offered human sacrifices. (106. 5, 9.)

Government. — Mexico remained a Spanish colony till 1821, when it gained its independence. It is now a republic consisting of a union of many states with a government much like that of the United States. Its official title is the United States of Mexico. Spanish is the language of the country. (105. 2.)

Castle of Chapultepec, Mexico.

Cities. — The capital city, Mexico, was once the capital of the Aztecs. It is built in a lofty open valley within sight of the snow-covered peak of Popocatepetl. How high is it above sea-level? (105. 6; 106. 7, 10, 11; 64. 8; 67. 6; 68. 1; 73. 7.)

Puebla is the second city in size.

The most important railway system of the country is the Mexican Central, which runs south from El Paso to the capital and to Veracruz.

The ports on the Gulf coast are Veracruz and Tampico. The chief port on the Pacific is Acapulco. (106. 8.)

REFERENCES.

BALLOU: Due South.
CHISHOLM: Handbook of Commercial Geography.
PRESCOTT: Conquest of Mexico.
HARPER'S MAGAZINE, December, 1893.
SCRIBNER'S MAGAZINE, May, July, 1894.
CHAUTAUQUAN, April, 1894; October, November, 1895.

72. CENTRAL AMERICA.

(14; 107.)

Position and Extent. — Central America lies between Mexico and South America, reaching at its northern extremity nearly to the isthmus of Tehuantepec, and at its southern nearly to the Isthmus of Panama. The Isthmus of Tehuantepec is a part of Mexico, and the Isthmus of Panama a part of the United States of Colombia in South America. The length of Central America is about 800 miles, and its greatest breadth 300 miles.

Compared with Mexico. — Its relief is lower, and its climate hotter than that of Mexico. Its products and people resemble those of Mexico. (107. 8, 9.)

Volcanoes. — Volcanoes are numerous and violent. Earthquakes are very frequent.

Forests. — The eastern slope is covered with dense forests containing valuable woods, the chief being mahogany. (79. 4.)

People. — The eastern region is occupied mostly by Indian tribes, while the Pacific coast has been settled by Europeans and their descendants.

Exports. — Sugar, coffee, cacao, and tropical fruits are exported.

History. — Columbus discovered the coast of Honduras on his fourth voyage (1502). The country has been the scene of frequent and terrible wars between rival Spaniards for its possession. For a time it was ruled as a colony of Spain, then the five states revolted and formed a federal union, but in 1833 the union was dissolved.

Divisions. — Central America consists of five independent republics and one British colony. (107. 5, 10, 11.)

Frequent political revolutions still occur, and the state governments are far from being stable.

Guatemala, Honduras, Nicaragua, and Costa Rica, the most flourishing states, extend each across the country from the Pacific Ocean to the Caribbean Sea. Salvador, the smallest state, lies along the Pacific coast and occupies a belt of land naturally belonging to Honduras. The British colony of Belize, or British Honduras, is south of the peninsula of Yucatan.

In Nicaragua is a large lake of the same name, whose waters are discharged into the Caribbean Sea by the San Juan River. This river is navigable, except where interrupted by rapids. It is proposed to pass these rapids by means of canals and locks, and to build a ship canal through one of the low passes from the lake to the Pacific. What will be the advantage of this Nicaragua Canal?

73. The West Indies.

(14; 107; 108.)

These islands may be divided into three groups: the Bahamas, flat, coral islands; the Greater Antilles, large islands more or less mountainous; and the Lesser Antilles, a series of volcanic mountain tops.

At the time of their discovery by the Spaniards, the islands now called the Lesser Antilles were the home of a fierce race of Indians who called themselves "Carib," which in their language meant brave men. It is from them that the Caribbean Sea has received its name.

Climate. — The West India Islands lie within the Torrid Zone. What influences moderate their climate? During the rainy season, which lasts from May to October, yellow fever is prevalent on the coasts, and furious hurricanes are frequent.

Products. — Sugar, rum and molasses, tobacco and cotton, coffee, cacao and spices, dyes and hard-woods, and tropical fruits are products of these islands. (108. 2, 3, 4.)

People. — Within a short period after the discovery of the islands, the native Indians were nearly exterminated. To-day the larger part of the inhabitants are free negroes, the descendants of slaves imported from Africa. Next in numbers are Europeans and their descendants. There are also large numbers of mulattoes, people of mixed white and negro blood, and coolies, laborers transported from the East Indies or China. (108. 8, 14.)

The Bahamas. — Several hundred islands form the Bahamas, but only a few are inhabited. They belong to Great Britain. Sponges are obtained from the surrounding seas. Nassau, on one of these islands, is a winter resort. (65. 15; 77. 3.)

The Greater Antilles. — The Greater Antilles include the large islands of Cuba, Haiti, Puerto Rico, and Jamaica.

Cuba and Puerto Rico belong to Spain. Cuba is the largest and most important of the West India Islands. It has wonderful natural resources, although its area is less than that of the state of New York. There are dense timber forests here. The tobacco and cigars of Cuba are famous, and more sugar is produced on this island than in any other country. Habana, its capital, on a fine harbor, is the only large city of the West Indies. (107. 1, 2, 4, 12; 108. 5, 6, 7, 9, 13; 65. 10, 14; 72. 4, 7, 8.)

Indian Statue, Habana.

Haiti, between Cuba and Puerto Rico, is divided into two negro republics, — the republic of Haiti on the west, and Santo Domingo on the east.

Mountain ranges running in the direction of the length of the island occupy the greater part of its area. Coffee is the chief product.

A Native Farm House, Cuba.

Jamaica belongs to Great Britain. (107. 6, 7; 108, 1, 10, 11, 12.)

The Lesser Antilles. — Most of the Lesser Antilles belong to Great Britain or France. The Netherlands, Denmark, and Spain have small possessions.

Trinidad Asphalt. — One of the wonders of the West Indies is the island of Trinidad, with its lake of asphalt. It is owned by the British government.

The laborers are all negroes, for no one else can endure the heat and malaria of the region. The lake is hard at the edges and soft in the middle. The asphalt crust is broken up with picks and crowbars, and loaded on dump-carts, which are drawn down a long sandy road to the wharf, where the load is dumped and carried by wheelbarrows on board the lighters. From these the pickings are hoisted on board ship in baskets, and thrown into the hold, where they settle down into a solid mass. When the vessel reaches its destination, the asphalt must be broken up again with the pick before it can be unloaded.

74. Bermuda Islands.

In the Atlantic Ocean, about 600 miles east of South Carolina, are the Bermuda Islands, possessions of Great Britain. They include nearly 200 islands, only fifteen or twenty of which are inhabited. Early vegetables, especially potatoes, tomatoes, and onions, are here raised for the New York and Halifax markets. Bermuda is a noted winter resort. (114.)

SOUTH AMERICA.

75. Position, Relief, and Drainage.

(51 ; 109 ; 110 ; 111 ; 112 ; 113.)

Position and Extent. — The size of South America compared with that of the United States may be seen from this figure.

S. A. and U. S.

What is the longitude of the most eastern point of the United States? Trace this meridian southward and tell what lands it crosses. What is the longitude of the most western point of South America? Trace this meridian northward and tell what lands and bodies of water it crosses. Is the meridian of Cape St. Roque more nearly that of London or that of Washington? What part of South America is crossed by the equator?

Trace the equator eastward and tell what it crosses. Does it touch any part of Asia? Trace the Tropic of Capricorn round the world and tell what it crosses. Does it cross as many important regions as the Tropic of Cancer crosses?. Name the bodies of water surrounding South America.

A Home in the Tropics.

Four-fifths of South America is within the tropics. What part belongs to the south temperate zone?

Relief.— What great range of mountains lies in the western part of South America? Where are the other highlands? Where is the great plain of South America? (109.)

In South America the great plains when tree-bearing are called selvas. The plains of La Plata basin are much like our prairies, and are called pampas, from a Spanish word meaning fields. The llanos are the plains of the Orinoco. They are treeless, and are covered with grass in the wet season, but are almost deserts in the dry season.

Volcanoes and Earthquakes. — Among the Andes are several groups of volcanoes, which form the eastern part of the "circle of fire" of the Pacific Ocean. (9.)

Earthquakes are very common in the Andes, especially on their western slope.

Rivers and Lakes.— The chief means of communication across the continent are by the great navigable waterways.

There is only one lowland region, though it has three different names. The immense plain of the Orinoco valley, of the Amazon valley, and of La Plata valley extends across the continent from north to south.

In the northwest, the **Magdalena** is a large river navigable in places, but at its mouth a dangerous barrier prevents the entrance of vessels.

The **Orinoco** is a long river, and enters the Caribbean Sea by several mouths.

The northern mountains of Brazil partly separate the basins of the Orinoco and of the Amazon.

The **Amazon River** drains the largest basin, and discharges more water, than any other river in the world. It is navigable for large steamers nearly to the base of the Andes, and with its many tributaries furnishes about 50,000 miles of navigable waterways. It is also easily navigated by sailing vessels, for the prevailing winds blow up the river, and the current helps the boats when they are going down stream. During the rainy

season the dense forests through which it flows are flooded by the river. (112. 9.)

Into one of its tributaries, the Rio Negro, the **Cassiquiari,** an affluent of the Orinoco, flows during a part of the year, thus connecting the two river systems.

In the southeast, the **Rio de la Plata,** formed by the Paraguay, the Parana, and the Uruguay, flows into the Atlantic by a large estuary.

The three great river systems of the Orinoco, the Amazon, and La Plata ramify and almost unite with each other; together they form the largest navigable network of waters on the globe.

On Lake Titicaca, South America.

The most remarkable lake is Lake Titicaca, on the high plateau of Bolivia, 12,500 feet above the sea. It is about a third as large as Lake Erie, and is the highest large lake in the world. (112. 3, 4, 8.)

76. Climate and Products.

Climate. — What part of South America has a tropical climate? What part a subtropical? What part a warm temperate?

What part has an annual rainfall of more than 75 inches? Is South America, on the whole, a land of much rainfall? What exceptions are there?

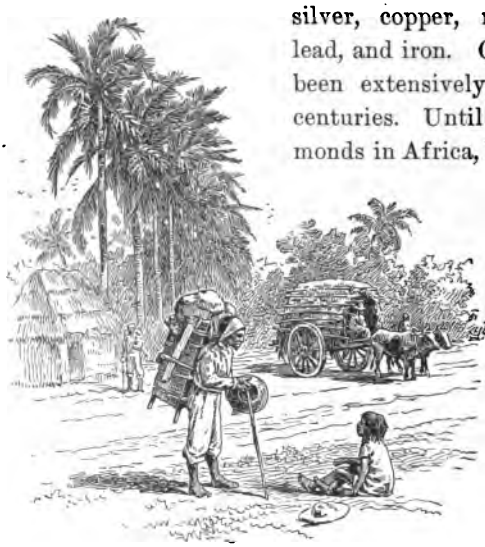
The seasons are the wet and the dry. North of the equator, the rainy season is from April to October; south of the equator, it is from October to April. Why do the rainy seasons come at these times? In the valley of the Amazon,

which lies near the equator, the greatest rainfall is in January, and the least is in July.

A strip of country lying west of the Andes, including parts of Peru and Chile, is a rainless region. Here the prevailing winds are from the east.

The portion of South America lying in the temperate zone has a climate like that of the corresponding latitude in North America; but milder, because influenced by the nearness of the oceans.

Products. — South America is very rich in minerals, — gold, silver, copper, mercury, platinum, lead, and iron. Gold and silver have been extensively mined for several centuries. Until the discovery of diamonds in Africa, Brazil was the chief diamond producing country of the world. Chile, Peru, and Bolivia export copper.



On a Coffee Plantation.

Guano, a valuable fertilizer, is obtained on the small islands off the coast of Peru.

The tropical products of coffee, cacao, vanilla, and sugar-cane are furnished by the northern countries and Brazil. In the high valleys of the tropical regions of Chile, the cereals of the tropical zones, as well as wheat and corn, are cultivated with success, and the vine flourishes. The potato is there in its native home.

In the selvas of the basin of the Amazon the trees are very valuable. Besides the banana, which furnishes food for the

natives, there are found several varieties of cedar, gigantic beech trees, ebony trees, and india rubber trees.

77. Inhabitants.

People. — What have you learned about the early discovery of South America? The Spaniards found, in the northwestern part of the continent, a highly civilized race of Indians, much like those of Mexico and Central America. The chief tribe was that of the Incas of Peru, whose capital was at Cuzco. They were conquered by the Spanish commander Pizarro, who founded the city of Lima and made that his capital. It remained the Spanish capital for nearly three hundred years. The wonderful ruins of the cities of the Incas remain, and the descendants of this people still inhabit that region. The tribe of the Incas differed much from the savage Indian tribes in the other parts of the country.

Of the total population of thirty millions in South America there are only three millions native Indians. These Indians are found in the forests and on the plains of the wild interior regions. (74. 2.)

The ruling people are descendants of the Spanish and Portuguese colonists.

Negro slaves were brought from west Africa for many years, but they have all been set free. Chinese were also brought in large numbers for work in the mines.

Since 1870 many Italians, Spaniards, and Portuguese have emigrated to South America, especially to Brazil and Argentina.

Prevailing Languages of South America.

Language and Religion. — Among the ruling class, Spanish is the common language in most of the countries. The Portuguese language is spoken in Brazil, except in the unexplored interior. The language spoken in

Guiana by Europeans and their descendants can be inferred by the names of the divisions.

What is the prevailing religion in South America? (23.)

78. Countries.

For many years Spain and Portugal ruled the South American countries as colonies, but one by one these colonies gained their independence. Now South America consists of three small European colonies and ten republics. The republics are divided into states, and have forms of government copied from that of the United States.

On the north are the republics of Colombia and Venezuela and the three European colonies of British Guiana, Dutch Guiana, and French Guiana.

In the central region of the Andes are Ecuador, Peru, and Bolivia. In the center is Brazil. On the south are Chile, Argentina, Paraguay, and Uruguay.

79. Colombia.

Position. — The republic of Colombia is named in honor of Columbus. It occupies the northwestern corner of South America and the Isthmus of Panama.

Relief. — Three great ranges of the northern Andes cross Colombia from north to south. Between the western and the central range lies the valley of the Cauca, the largest tributary of the River Magdalena, whose valley lies between the central and eastern range. The eastern part of the country consists of grass-covered plains where cattle are raised. (51; 110.)

Products. — The minerals of Colombia are little mined. The finest emeralds in the world are found here.

Less than a tenth of the land is cultivated. The exports are coffee, tobacco, hides, india rubber, and silver ore.

Cities. — The capital of the republic is Bogota. (110. 2, 3.)

View near Bogota.

The foreign trade of Colombia is carried on by two cities on the Isthmus, — Panama on the Pacific, and Colon, or Aspinwall, on the Caribbean Sea, thirty-five miles apart. These cities are connected by a railroad which transfers goods and passengers from the ships on one side of the Isthmus to those on the other. (110. 7, 9; 65. 3; 69. 12.)

80. Venezuela.

Relief. — Between the mountain ranges in the northwest and southeast lies the fertile valley of the Orinoco River. This river is navigable throughout Venezuela, and its largest western branch can be ascended to within sixty miles of Bogota. Notice the boundary line claimed by Venezuela. (51.)

Lake Maracaibo is the largest lake in South America. A narrow channel connects it with the Gulf of Venezuela. What did the early Spanish explorers find here? (112. 1.)

Products. — The coast range is densely wooded, and in its valleys are sugar and cacao plantations. The greater part of the country consists of extensive llanos, where cattle, horses,

and sheep are raised, the real wealth of Venezuela. Tropical products are exported. Copper and gold are mined.

Commerce. — Five lines of steamers connect Venezuela with the ports of Europe.

Capital. — The capital and largest city is Caracas.

81. Guiana.

Relief. — Guiana occupies the northeastern corner of South America. Its coasts are low and marshy, but in the interior are forest-covered hills and river valleys.

Products. — Large quantities of sugar, rum, molasses, and timber are exported. Gold has recently been discovered.

Divisions. — Into what colonies is Guiana divided? The foreign powers claim the country from the coast to the mountains, but they occupy only the land near the coast. Most of the inhabitants are negroes and East Indians or "coolies." The number of white people and of Indians is small. (51; 112. 5, 11.)

British Guiana. — British Guiana is the most prosperous of the three colonies. Its capital is Georgetown.

Dutch Guiana. — Dutch Guiana has for its capital the town of Paramaribo. Orange trees line its broad, straight streets.

French Guiana. — French Guiana has been used as a penal settlement for France and its colonies. Cayenne, its capital, has given its name to the red pepper which grows there.

82. Ecuador.

Position and Relief. — The Republic of Ecuador received its name from the Spanish word for equator. It is one of the least important of the South American states.

Several of the highest peaks of the Andes mountain system are in this country. (51; 109. 3, 7; 74. 1.)

Products. — The important product of Ecuador is cocoa; coffee, ivory-nuts, and rubber are also exported.

Cities. — Quito is the capital of Ecuador. It is built on a tableland nearly 10,000 feet above the sea, and from its great square one can see the grand, snow-clad peaks of the Andes. (111. 2, 6, 8, 11.)

Guayaquil is the chief seaport. (111. 13.)

83. Peru.

Position and Relief. — Peru has a low narrow belt of territory extending for 1400 miles along the coast. The high plains of the Andes, reached only by dangerous mule paths, are cold and bleak. The inward slope of the Andes leads to the woodlands of the basin of the Amazon. (51.)

Products. — There is great mineral wealth in Peru, especially of silver, quicksilver, and copper.

The llama and the alpaca furnish valuable wool for export, and milk and flesh for food, and serve besides as beasts of burden. Other exports of Peru are sugar, cotton, and coffee. Wild llamas roam among the Andes in large herds. (111. 12.)

Cities. — Lima is the capital. It is situated in the rainless belt, and it has often been devastated by earthquakes. Callao, its seaport, is on the best harbor of Peru. (111. 1, 3, 4, 5, 7, 9, 10.)

84. Bolivia.

Bolivia. — Bolivia was named in honor of General Bolivar, called the "Liberator," under whom Spanish South America gained its independence. His memory is honored in his country as that of General Washington is in ours.

Relief and Products. — Bolivia is an inland state having in its western part a high plateau and mountain ranges, and in its eastern part land sloping downward to the basins of the Amazon and La Plata. Its relief (except that it lacks the sandy coast line), its mineral wealth, and its herds of llamas are similar to those of Peru. The lowlands near Brazil yield the tropical products of that country. (51.)

Cities. — Sucre is the capital. (112. 2, 6.) La Paz, southeast of Lake Titicaca, is the largest city and chief trading center.

85. Brazil.

Position and Size. — About two-fifths of the area and of the population of South America are found in Brazil. It has nearly as much coast line as the United States, and its inland boundaries touch those of every other state on the continent except Chile and Ecuador. Its area is nearly equal to that of the United States, but its population is only about one-fifth as many.

Relief. — Along the Amazon River in the north of Brazil are broad, low, moist plains, while in the southeastern part are highlands traversed by ridges of mountains and hills, and interspersed with grass-covered plains. (51.)

The vegetation of Brazil, owing to heat and moisture, is so luxuriant as to be a hindrance to the development of the country. It is with great difficulty that roads are made or kept passable after having been made. (112. 7; 79. 6.)

Products. — Brazil produces more coffee than any other country. Cotton, sugar, cacao, and tobacco, are the other chief products, while the forests produce valuable timber, dyewoods, and gums: nut and fruit trees of all kinds abound. What kind of nuts do we get from Brazil? Cattle, horses, and mules are raised on the plains.

Brazil is rich in minerals, especially gold and iron. What precious stones are obtained in this country?

Government. — Brazil was a dependency of Portugal till 1822, an independent empire till 1889, and since then has been a federal republic modeled after the United States.

Cities. — The capital of Brazil, Rio Janeiro, is the second city of South America in population, only Buenos Ayres being larger. It is on a magnificent bay of the Atlantic, surrounded by an amphitheater of mountains in the midst of the rich vegetation. Its harbor is one of the best in the world. It has an extensive commerce with other countries. (112. 10.)

Bahia, the oldest city of Brazil, and Pernambuco are large and important seaports.

86. Chile.

Position and Relief. — Chile is the best governed of the South American republics. It is a long, narrow belt of land about 100 miles wide, extending for 2800 miles along the Pacific coast. Here is the loftiest summit of the Andes, that of Aconcagua. Earthquakes frequently occur. (51.)

Products. — The northern third of Chile is a hot, rainless desert, valuable for the niter and guano beds, and the silver, copper, gold, and saltpeter mines.

The central third has a temperate climate and moderate rainfall. There wheat, corn, and European fruits are raised in abundance, while the pasture lands support great herds of cattle and horses. (113. 11.)

The southern third of this long strip of territory is chiefly a waste of rocks beneath snow-capped mountains edged with glaciers. The rain here is almost perpetual, and the lower mountain slopes have dense evergreen forests. What does this teach you as to the winds of the Pacific along this coast? On a few islands at the extreme south and on a strip of land along the north shore of the Straits of Magellan, sheep and cattle are raised. (113. 8.)

Cities. — Santiago, the capital, is a fine city situated in the midst of the magnificent scenery of the Andes. A railroad connects it with Valparaiso, the chief seaport. (113. 3, 5; 109. 1, 4; 77. 8.)

Railroads. — Chile has made great progress in railway construction.

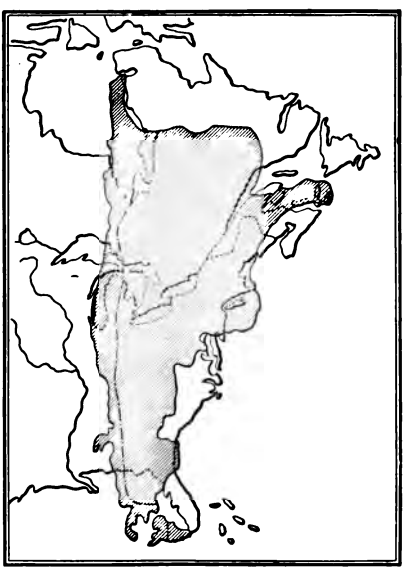
Railroads extend along the coast for 300 miles south of Santiago, and short lines extend into the Andes from most of its important ports. An important road connects the Atlantic and Pacific Oceans, joining the ports of Valparaiso and Buenos Ayres.

Islands. — The islands of Juan Fernandez and Easter belong to Chile.

87. Argentina.

Position. — Argentina, the second state of South America in size, occupies the southern part of the continent exclusive of Chile. Its area is about one-third as large as that of the United States. This country has developed very rapidly of late, and will probably surpass in commercial importance all the other countries of South America. (51.)

Size. — The immense length of Chile and Argentina may be understood from the following figure. It will be seen that Argentina in latitude has an extent almost equal to that from the southern point of Florida to the northern part of Labrador.



Chile, Argentina, and United States.

Relief. — In the west are spurs of the Andes, but nearly all of the rest of the country is a vast level plain. In the interior are large tracts covered with volcanic ashes. Upon the pampas or southern plains great herds of horses, cattle, and sheep are raised. (72. 3; 109. 5.)

Products. — Wheat, horns, hides, and salted beef are the chief exports of the country. (This is one of the few countries of the world in which horses run wild.) (113. 1.)

Patagonia. — The southern part of Argentina, from the Rio Negro to the Strait of Magellan, is known as Patagonia. This

land about the Strait and part of the island south of it, called Tierra del Fuego, belongs to Chile, but the eastern part of Tierra del Fuego forms part of Argentina. This part of South America is little known. (113. 4, 7.)

Cities. — Buenos Ayres, the capital, situated on Rio de la Plata, is the chief seaport. (113. 9, 10; 68. 11; 77. 11.)

Rosario is the second city in population.

La Plata, a new town not far from Buenos Ayres, is growing rapidly.

Railroads. — The Argentine system of railways is important, both in the development of the country and in furnishing a route across the continent from Buenos Ayres to Valparaiso. Thirty years ago Argentina was a pastoral country exporting only wool, hides, and tallow; but its fine system of railroads and the use of American machinery have now enabled it to compete with the great agricultural and manufacturing countries.

88. Paraguay.

Position and Relief. — Paraguay is an inland republic, and except on the north its limits are marked by rivers.

Ranges from the tableland of Brazil on the north extend southward through Paraguay. On the western slope are wide grassy plains, the home of the more civilized inhabitants. The eastern slope is covered with unexplored forests, the home of the Indians. Where the Parana and Paraguay Rivers approach each other, at the southwestern angle of the republic, there are great marshes. (51.)

Continued wars and revolutions have exhausted the country.

Products. — Besides the fine timbers of the forests, oranges and a kind of tea called mate, made from the dried leaves of a species of holly, are exported.

Capital. — Asuncion is the capital.

89. Uruguay.

Relief and Products. — Uruguay lies east of the Uruguay River and south of Brazil. Its surface, climate, population, and industries are similar to those of Argentina, and like that country, also, it is being rapidly developed. It exports meat extract and canned provisions. (51.)

Capital. — Montevideo is the capital, and the commercial rival of Buenos Ayres. (113. 2, 6; 67. 9.)

90. Falkland Islands.

The Falkland Islands lie in the Atlantic eastward from the Strait of Magellan. They are treeless and desolate, but cattle, horses, and sheep thrive on the tall grass. Fish and seals abound along the coasts. (51.)

Stanley Harbor is the residence of the British governor who rules the islands.

What other South American islands are there?

REVIEW QUESTIONS.

What countries of South America does the equator cross? What part of South America is directly south of Washington?

Compare South America with North America as to size, coast line, lakes, cities, climate, agriculture.

Describe the plains characteristic of each of the three main river valleys of South America. Why is it that most of the animals of the selvas are climbers?

What influence have the Andes Mountains upon the climate of South America? What is the climate of Argentina? Of Uruguay? Of Peru? Of Chile?

Compare the Amazon and the Mississippi. Compare the estuary of the Amazon and the estuary of La Plata.

By what European nations was South America colonized? What part is now subject to these nations?

Name some of the important minerals found in South America. In what country are diamonds found? What countries export copper?

What are the chief products of that part having a tropical climate? What plants are grown in the high valleys of northern Chile?

Ought one to say that South America is well fitted for agriculture? How do you account for the fact that the exports of South America are only natural products? What are the principal centers of production of cotton, sugar-cane, coffee, in South America? What are the chief products of Argentina?

What country of South America is likely to become an important rival of the United States in wheat-growing and cattle-raising? Is the valley of the Amazon a good place in which to raise horses? Why? Is it a good place for sheep?

What are the resources of the cities in the central region of the Andes? Why are there more large cities in North America than in South America? What are the chief ports of South America? Why are Montevideo and Buenos Ayres important cities? Give an account of a journey from Valparaiso to Pernambuco.

REFERENCES.

SQUIER: Peru.
BROWN: The Amazon and its Tributaries
PAGE: La Plata. The Argentine Confederation.
HIELD: Glimpses of South America.
STANFORD: Compendium of Geography and Travel.
BATES: The Naturalist on the Amazon.
DIXIE: Across Patagonia.
TURNER: Argentina and the Argentines.
WELLS: Three Thousand Miles through Brazil.
CHILD: The Spanish-American Republics.
PRESCOTT: Conquest of Peru.
IRVING: Companions of Columbus.
WHYMPER: Great Andes of the Equator.
CHISHOLM: Handbook of Commercial Geography.
CHAUTAUQUAN, May, June, 1893; January, February, 1894.
ENGINEERING MAGAZINE, October, 1894.
NATIONAL GEOGRAPHIC MAGAZINE, Vol. I., No. 4.

EUROPE.

91. Extent, Relief, and Drainage.

(52; 53; 54; 55; 115–133.)

EUROPE and Asia are so closely connected and have so much in common that it is often necessary to speak of them together, and *Eurasia* is a convenient name for this one land mass. You can easily see how this word is made. The word *Afeurasia* will be used in referring to the connected land mass of Africa, Europe, and Asia.

Size. — Compare Europe and the United States as to size.

Europe is the smallest of the continents except Australia, but the most important. In proportion to its area it has a larger population than any other continent. It contains about one-fifth of all the inhabitants of the world, and a large portion of those most advanced in civilization. The inhabitants of Europe with their descendants in America and Australia are the most vigorous, enterprising, and intelligent portion of the dwellers on the earth.

Europe and United States.

In what hemisphere is Europe? In what latitude? In what zones? What are the parallels which bound it? The meridians which bound it?

Its area is 3,782,000 square miles, a little larger than the United States. It is nearly half as large as North America, one-third as large as Africa, and one-fifth as large as Asia.

Relief. — The relief of Europe exhibits a central mountain system with a plain sloping northward from it, and three peninsulas extending southward.

The Alps with the connected mountains form the central framework of Europe. Their length is more than 700 miles.

To the Alps are connected on the west the Cevennes of France and the Pyrenees between France and Spain. On the south the Apennines extend through Italy. On the east the Carpathians surround Hungary and connect with the Balkan Mountains, which, through the highlands of Asia Minor, connect with the central mountain system of Asia. It must be noticed that there are important breaks between the ranges mentioned. What are some of these breaks? A detached mountain system extends along the Scandinavian peninsula. Between Europe and Asia on the south are the Caucasus, and on the east are the low Ural Mountains.

Between the Alps and the Scandinavian mountain system lies a plain occupying two-thirds of the area of Europe.

Historical Note. — The Alps have had a remarkable influence upon the history of Europe. The hordes from Asia by whom we suppose Europe was first settled, came by way of Asia Minor, and having passed the Bosporus were turned northward by the Alps over the plains of Germany. Those who would enter the country south of the Alps could do so only by sea, a route by which only those could come who were sufficiently advanced in civilization to build ships and to know the art of navigation. These were the most civilized of their race and so brought a higher civilization to Europe than was brought by the great hordes entering by the northern route. Thus Europe north of the Alps and Europe south of the Alps from the earliest days of which we have any record have been occupied by people differing greatly. The earlier civilization of southern Europe has at length been surpassed by that of the steadier and more slowly developing people of the north.

Rivers and Lakes. — The largest European river, the Volga, flows into the Caspian Sea. With its many branches it is a great highway of trade for the grain-producing lowlands of Europe.

Into the Black Sea flow four navigable rivers, the Don, the Dnieper, the Dniester, and the Danube. The Danube has sixty navigable tributaries, and it carries immense quantities of grain to the East.

From the Alps four great rivers flow. The Danube, the second European river in size, the Po, flowing through a very fertile plain, the Rhine, the most beautiful of European rivers, and the Rhone, the most rapid and wild, roll in different directions from this central highland.

The Rhine has a swift current and many falls; those of Shaffhausen are the finest in Europe. Its banks are lined with vineyards, gardens, fields, villages, castles, and picturesque ruins, each with its legend, and all with their charm. (124. 5, 7, 9; 125. 2, 7.)

The Rhone rises near the sources of the Rhine, and like that river, is glacier-fed. Until it reaches Lake Geneva, it is a foaming, dashing mountain stream. Here it deposits the mud that it brings from the mountain glaciers, and its waters issue clear from the lake. In the last 800 years it has filled a mile and a half of the upper end of the lake.

The Valdai Hills, though only about 1500 feet high, are the center from which many rivers flow. Name four of these rivers. Where is the Vistula? The Oder? The Elbe? The Seine? Find two rivers of the Mediterranean system.

The lakes of Europe are in two groups: one around the Baltic Sea, the other in and south of the Alps.

92. Climate and Products.

Climate. — The climate of Europe is more mild, equable, and healthful than that of any other of the grand divisions. No portion of Europe except central Russia is more than 400 miles from the sea. What effect does this have upon the climate? Study the slopes of Europe and decide how they

affect the climate. Is any portion of Europe very moist? Is any very dry? Compare Europe with the United States as to temperature and rainfall. The rivers of Europe are much less affected by freshets than those of North America. Why?

Are the rivers of northern Italy subject to freshets? Why?

The rainfall on Italy and the southern Alps occurs mostly in the winter months, and hence, in the winter and spring the rivers bear along great floods of water, but become comparatively small in summer. This makes irrigation a necessity in the valley of the Po. Cattle raising cannot be well carried on where the population is dense and the rainfall small. Hence, for dairy products, Italy depends on its mountainous and sparsely settled sections.

North of the Central Highlands the influence of the Atlantic is so great that the cold increases eastward more rapidly than it does northward, and ports on the Black Sea are closed with ice in winter while those in Norway are open.

Products. — What have you learned about the climate and soil near the Arctic Ocean? What is the food of the people there? South of this barren belt is the zone where barley and oats grow, pine trees flourish, and cattle and sheep are reared. Farther south, besides the rye and the wheat, grapes, apples, pears, and peaches are cultivated and deciduous trees abound. Still farther south evergreen trees grow, and in the Mediterranean basin palms, figs, and grapes, as well as corn and wheat are found with the orange and olive trees. Trace these regions on the map. (26.)

The most important exports of Great Britain, France, Germany, Switzerland, Belgium, and The Netherlands are manufactured goods, while the exports of the other countries are mainly the products of the soil, forest, or sea.

Extensive mines of iron, lead, copper, coal, and salt are found in various parts of the continent and in Great Britain. Mineral springs abound.

93. People.

Races. — Most Europeans belong to the Aryan branch of the white race. Of the Mongolian or yellow race are the Lapps, Finns, and Samoyeds of the north and northeast. Other non-Aryan peoples are the Turanian tribes in the east of Russia, the Hungarians and Turks, the Basques of the Pyrenees, and the Jews and Gypsies scattered throughout Europe.

Religion. — There are twice as many Catholics in Europe as there are members of the various Protestant churches or of the Greek church. About seven millions are Jews, and there are the same number, nearly, of Mohammedans, most of whom are Turks.

Government. — There are four republics in Europe: France, Switzerland, and the two very small states, San Marino in Italy, and Andorra in the Pyrenees. The other states are monarchies. All of these are limited monarchies except two. Which are they?

The Early Mediterranean World. — A map of the world in 1400 showed only one continent. Europe, most of Asia, and the northern part of Africa were represented, and the place of the remainder of the continent was filled with strange figures of dragons and other monsters. For 2000 years before the discovery of America, the Mediterranean was the center of the known world. The Mediterranean world was ruled successively by Egyptians, Assyrians, Babylonians, Persians, Greeks, and Romans.

The earliest civilizations of which we have positive records are those which arose in the Nile valley and in the valleys of the Tigris and Euphrates.

The Phœnicians, whose country was but a narrow strip along the Mediterranean coast opposite Cyprus, and who were successively subject to the ruling powers, nevertheless greatly influenced the European world, for they were a colonizing and a trading nation. They founded Carthage on the northern coast of Africa as early as the ninth century B.C., and many other colonies on the coasts of Morocco and of Fez. They sailed through the Strait of Gibraltar (which they called the Pillars of Hercules) and founded Cadiz (Gades) on the Atlantic coast of Spain. They

reached Great Britain in their adventurous journeys, and traded with the natives for their tin. In the east they established their colonies on the Arabian and Persian Gulfs, and carried on an extensive trade with India, Ceylon, and the coasts of Africa.

To the Phœnicians we are indebted for our alphabet. The Egyptians had a hieroglyphic alphabet of several hundred characters, but there was no fixed character which represented always the same sound. The Babylonians and Assyrians had characters which represented syllables rather than sounds. The Phœnicians were the first people to determine the elementary sounds of their language and to give to each sound a fixed character. From the Phœnician alphabet the Greek was derived, from the Greek the Roman, from the Roman the modern alphabets.

REVIEW QUESTIONS.

What is meant by Eurasia? By Afeurasia?

Compare Europe with the other continents as to size and general form.

Make an outline map of North America. Mark out upon it in proper latitude the outline of the British Isles. The outline of Europe.

Could the continent of Europe hold the Mississippi River system?

What part of Europe is in west longitude? What mountain chains are crossed by the parallel of 60° north? What is the chief mountain system? What mountains are extensions of this system on the west? On the south? On the east? What part of Europe is a great plain?

Name three peninsulas on the west of Europe. Three on the south.

Make from memory a simple outline map of the Mediterranean Sea. What seas are connected to the Mediterranean Sea? Name three islands of the Mediterranean Sea. Name five straits of Europe and tell what waters they connect.

If the Black and Caspian Seas were connected by a canal, which way would the water flow? Compare the North Sea and the Baltic.

Name a river entering the Caspian Sea. Four rivers entering the Black Sea. Four rivers rising in the Alps. Name four rivers rising in the Valdai Hills. Two rivers entering the Baltic Sea. Two rivers entering the North Sea. Two entering the Mediterranean.

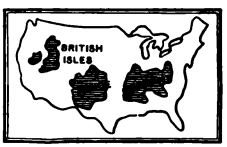
Does it take longer to go from Europe to America or from America to Europe? Why?

Is Europe warmer or cooler than Asia in the same latitude? Than North America in the same latitude? Describe the climate of central Europe. Of southern Europe. For what climatic reasons is northern Italy a poor country for cattle raising? For what climatic reasons are Germany and The Netherlands well adapted to raising cattle?

What other parts of the world were settled by Europeans?

94. The Countries of Europe.

The "six great powers" of Europe are Great Britain, Germany, France, Austria, Russia, and Italy. These nations have for a long time controlled affairs of continental importance.



Comparative Sizes.

How some of these countries compare with the United States in size may be seen from the above map.

95. The British Isles.

What sea and channel separate the British Isles from the continent of Europe? (53.)

The British Isles contain four countries, three of which — England, Wales, and Scotland — occupy the island of Great Britain. The fourth country is the island of Ireland. These two islands, with many smaller islands, form the United Kingdom of Great Britain and Ireland, having an area three times that of Virginia. (54; 117. 6, 12.)

96. England.

Relief. — The highlands of England with their wild moorlands are in the west, while the broad plains and fertile vales are in the east and south. The Cheviot Hills form part of the boundary between England and Scotland. (54; 117. 4, 7, 8, 11.)

The Cumberland mountain region contains the chief lakes of England with their beautiful scenery, and it is therefore called the "Lake Region." Here the poets Wordsworth, Southey, and Coleridge spent so much of their time that they are called the "Lake Poets." (70. 3, 4, 6.)

Victoria, Queen of England.

Rivers. — The largest and most important river in England is the Thames. The tide extends for seventy miles up the river.

The Thames is two hundred miles long, and on its way to the sea it passes Windsor with the Queen's beautiful castle, Eton with its famous school, Hampton Court Palace, Richmond with its royal park, Kew with its fine gardens, London with its crowded port, Greenwich with its observatory, Woolwich with its royal arsenal, and then on into the North Sea. (117. 9, 13, 14.)

The Tyne, in the north of England, flows through a great coal and iron region, and its ports are crowded with vessels laden with coal, and bound for far-distant lands. Newcastle is one of these ports.

The Mersey is a short river flowing into the Irish Sea; it flows through a very populous district, which carries on an immense trade. What great city near its mouth?

Products. — In the fertile plains large crops are grown, yet

great quantities of grain and other kinds of food must be imported.

The wealth of England lies in her coal and iron mines. These minerals are exported, and where the coal is mined vast manufacturing industries have sprung up. Tin and copper are obtained in the southwestern part. Lead, plumbago, salt, slate, and marble are also mined.

Cities. — England, for its size, which is about that of New York, contains more large cities than any other country in the world.

Victoria Embankment, London.

London, the capital, is the largest and richest city in the world. It is built on both sides of the Thames, and has magnificent bridges which span the river. Like New York, London has immense manufactures and commerce. Liverpool and New York surpass London in foreign trade, but London has an enormous coasting trade. (117. 1, 5, 14; 73. 9; 75. 1, 6.)

In London is St. Paul's Cathedral, the largest Protestant church in the world. Westminster Abbey contains the tombs of many of England's great monarchs, statesmen, soldiers, and authors. The Tower of London has been a palace, a prison, a fortress, and it is now an armory and a treasury for jewels. The British Museum is very rich in its collections. (117. 2; 67. 1; 68. 12; 69. 2; 71. ; 76. 14; 77. 1.)

Liverpool is the second port. Its docks extend for six miles along the River Mersey. A splendid line of steamers runs between Liverpool and New York. Liverpool sends to the

United States cotton, woolen, and linen goods, hardware and cutlery, iron and steel goods. What does it receive from our country? (117. 3.)

Manchester, on a branch of the Mersey, is the largest manufacturing city in the world. It is a city of warehouses, filled chiefly with cotton goods. A ship canal has been built from the Mersey to give the city direct communication with the sea.

Birmingham, the fourth city in size, is in the center of the coal and iron trade. It is a city of workshops, where are manufactured all kinds of articles that are made from any metal, from needles and pens to stoves and steam engines. Toys are made here in such quantities that the city is called the "toy shop" of Europe.

Sheffield, on the Don, makes the best cutlery in the world.

Oxford and Cambridge are famous university towns.

Islands. — Among the British Isles, the Isle of Wight in the English Channel is the most beautiful. (117. 10.)

The Isle of Man, in the midst of the Irish Sea, has herring and cod fisheries. Its inhabitants have their own governor and make their own laws.

97. Scotland.

Extent. — Scotland has about 700 islands near it, and with these islands it is about two-thirds the size of England. (54.)

Most of the Scottish islands are on the north and west coasts. In the north are two groups of islands, the Orkney and the Shetland. The Orkneys are very bleak and dreary; they have important fisheries. The Shetland Islands are noted for their little Shetland ponies.

The many islands along the western coast, called the Hebrides, or the Western Isles, are wild and rugged, and many of them are famed for their grand mountain scenery.

The small island of Staffa has wonderful caverns.

Firths. — The coast of Scotland is broken by many inlets of the sea. These inlets, as well as the lakes, are called lochs, and the mouths, or estuaries of the rivers, are called firths. The eastern coast is little broken, but it has three large firths, — the Moray Firth, the Firth of Tay, and the Firth of Forth. Which is the longest?

Clam Shell Cave, Staffa.

From Moray Firth a chain of lakes, joined together to form the Caledonian Canal, extends to the Firth of Lorn on the west, and through this waterway vessels can pass from the North Sea to the Atlantic Ocean. A canal connects the Firth of Forth with the Firth of Clyde. These two firths lead into the midst of the coal and iron fields of Scotland, whose products are carried by their waters. On the banks of the Firth of Clyde and of the River Clyde great ships are built.

Lakes. — The best known of the beautiful lakes are Loch Katrine, called the "Queen of Scottish Lakes," and Loch Lomond, which Sir Walter Scott has made famous in his poem, *The Lady of the Lake.* (118. 13.)

Relief. — Three-fourths of the surface of Scotland is covered with mountains and hills, and these with the clear lakes and beautiful arms of the sea make the scenery very grand. (118. 3.)

Cities. — Edinburgh is the capital; it is built on a commanding position overlooking the Firth of Forth. (118. 7.)

The Crest of a Mountain in Scotland.

The largest and richest city and chief seaport is Glasgow. Besides the ship-building yards, where great ocean steamers and iron vessels are built and the works where steam engines are made, there are extensive cotton mills, and glass and chemical works. (118. 5.)

James Watt made his first engine at Glasgow, and Henry Bell his first steamship, which he launched on the Clyde.

Aberdeen is an important seaport at the mouth of the River Dee. It is built chiefly of granite, for it is in the midst of large quarries. This city has large paper-mills and shipyards.

Dundee, the center of the linen trade, is an important city.

98. Ireland.

Relief.— Ireland is about the size of the state of Maine, and consists of a low plain of clayey soil which retains the rainfall in large lagoons and lakes. In the circumference of this plain are many mountain masses. The western coast is bold and rugged and greatly indented, like that of Scotland, while most of the eastern coast is low and sandy. (54.)

The central plain, owing to the abundance of moisture, is very green and is in reality an immense pasture field with many large bogs. The bogs are covered with peat, a substance

formed from decayed vegetable matter. This peat is cut into blocks, dried in the sun, and used for fuel.

On the north coast is the greatest wonder of Ireland. It is a natural pier, a series of green stones arranged in low, many-sided columns, stretching far out into the North Channel. An Irish fable says that giants attempted to build a road or causeway across to Scotland, and hence these stones have received the name of the Giant's Causeway. (118. 4, 10.)

Rivers and Lakes.—Most of the rivers of Ireland are short. The only important river is the Shannon.

Ireland has many lakes. The largest is Lough Neagh (Nay) in the northeast. The lakes of Killarney in the southwest with lofty mountains in the background, their banks densely wooded, and lovely islands in their waters, are very beautiful.

Cities.—Dublin is the capital of Ireland and its chief seaport.

The second city of Ireland is Belfast, the center of the Irish linen trade.

Cork, the third city in size, has a fine natural harbor and exports grain, cattle, dairy products, and provisions.

Custom House, Dublin, Ireland.

Limerick, the fourth city, is in a region which abounds in ruins of castles, churches, and abbeys. (118. 1, 2, 9; 73. 1; 77. 9.)

99. The British Empire.

At the time of the discovery of America, English rule was limited to the British Isles; but during the last four centuries

colony after colony has been established, until to-day the British Empire is the largest and most powerful in the world. Its area is one-half larger than that of North America, or about one-fifth of the entire land surface of the earth, and its population is much greater than that of the entire Western Hemisphere.

Great Britain's possessions are found in every zone, from the ice fields of Hudson Bay to the tropical jungles of India; and her subjects vary in civilization from the savage Kaffirs of Cape Colony to the cultivated people of London or of Toronto. (23.)

Sixty years ago only camps of native savages were to be found in Australia, and in New Zealand the Maoris held their war-dances and devoured their prisoners. Now these Australian colonies have over four millions of British subjects.

The greater part of temperate south Africa, as well as vast territories in equatorial Africa, belongs to Great Britain.

Honduras in Central America, British Guiana in South America, some of the West Indies, and many of the islands of the Pacific are British possessions.

The most important of all her colonies is the Indian Empire.

Historical Note. — Great Britain first became known to other peoples of Europe through the Phœnicians. In 55 B.C. the Romans under Cæsar (see page 225) came from Italy and established their rule upon the island. They found there a native Celtic people called Britons, and they named the land Britannia (modern Britain). In Wales and in the district of Cornwall the descendants of these Britons have retained to this day the physical characteristics and the language of their ancestors.

The Romans withdrew in the fifth century A.D. from this distant province of theirs in order to defend their own country from enemies. An invasion soon followed of Teutonic (German) tribes from across the North Sea, the Angles, Saxons, and Jutes, who, after many years of warfare, subdued the greater part of lower Britannia. The country was then called the land of the Angles, or Angle-land, a word which was finally changed to England.

These new invaders drove the native Britons, whom they called Welsh, a word meaning stranger, into the hill country in the west, the region now called Wales. Incessant were the wars with the Welsh, until, in the thirteenth century, their country was united to England.

Bands of Scandinavians, called Northmen, and later, Normans, had, in the ninth century, gained for themselves a district in France afterwards called Normandy. There they adopted the language and civilization of the French. In 1066 William the Conqueror, Duke of Normandy, invaded and conquered England.

A long period ensued in which there were two distinct languages spoken in England. The speech of the common people was Anglo-Saxon, that of the Teutonic invaders of the fifth century; the official speech was Norman-French, that of the invaders of the eleventh century. From the union of these two languages our modern English has been derived.

The earliest inhabitants of Scotland were a Celtic people called Picts. During the Roman sway on the island two walls were built, the first from the Solway to the Tyne, the second from the Forth to the Clyde, as a protection against this hostile people.

At the beginning of the sixth century, the Scots, a Celtic people in Ireland, left their native home and, crossing over to Great Britain, founded there in the highland region a Scottish kingdom. From them this northern part of the island received the name of Scotland.

Edinburgh was founded in the seventh century.

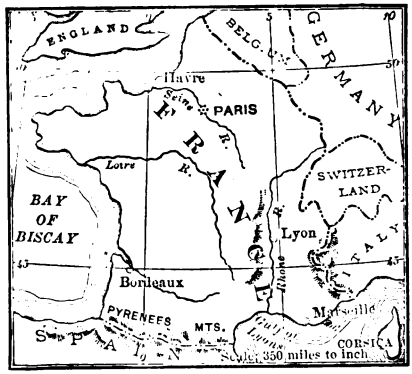
Early in the eighteenth century Scotland was united to England, and from a century later dates the United Kingdom of Great Britain and Ireland.

100. France.

Position and Relief. — The position of France between the Atlantic Ocean and the Mediterranean Sea is a very advantageous one for maritime trade. Its frontiers are all natural ones, except the northeast one towards Germany and Belgium, and this is guarded by a line of fortresses.

Near the center of France there is a high plateau, from which the land slopes, in broad, fertile plains, westward to the Atlantic Ocean, and southward to the Mediterranean Sea. In

the southwest, around the low coast of the Bay of Biscay, there are thousands of square miles that are inhabited only by a few sturdy shepherds. The land there consists of dreary, barren plains, partly sand and partly marsh, called Landes, where only coarse grass and furze can grow. (55; 116. 7.)



The French Alps lack the grandeur of those of Switzerland, but they have many imposing and picturesque sites.

Mont Blanc, the highest peak of the Alps, is in France. (65. 11.)

Near its summit lies the great glacier, the Mer de Glace, and at its foot the delightful valley of Chamonix. (127. 3, 5; 72. 16.)

Waterways of France. — The rivers of France are navigable to all parts of the interior, and canals complete the waterways. Marseille is connected by canal and river with Havre and with Bordeaux, thus making two means of water transportation from the Mediterranean to the Atlantic across France.

Products. — In the north of France, wheat, corn, and beet root for sugar are cultivated; in the center, such fruits as grapes, plums, pears, and apples; and in the south, olives, oranges, figs. What does this tell you about the climate of the country?

Russia is the only country of Europe that raises more agricultural products than France, but Russia has three times as many acres under cultivation. Most of the French farms are very small. France produces more wine than any other country. (116. 13.)

Coal and iron are mined, but the supply is not sufficient for the country, and much is imported.

Industries. — Only Great Britain and the United States surpass France as manufacturing and trading countries. Textile manufactures, silk, woolen, linen, and cotton, are the most important. The taste and inventive skill of the French are largely employed in the manufacture of fancy articles, in which they have no rivals. The porcelain made at Sevres, near Paris, and also at Limoges, is famous the world over.

France is one of the great military powers of Europe, and her navy is second only to that of Great Britain.

Cities. — Paris, the capital, is called the finest city in the world. In no other city are there so many grand palaces, churches, museums, picture galleries, theaters, and places of amusement, and such bright, gay, well-shaded streets with noble monuments and beautiful fountains, as in Paris. (116. 1, 2, 3, 4, 6; 71. 11, 15; 76. 8, 12; 77. 13.)

An Arch in Paris.

The Louvre, the most celebrated picture gallery and museum, is filled with some of the most valuable pictures and historical treasures in the world. (76. 10, 13.)

Once a hospital for old soldiers, the Hotel des Invalides, covering eighteen acres, is now the military museum of France. In its church is the tomb of Napoleon. (66. 3; 72. 10.)

The finest of the churches is the Cathedral of Notre Dame. (69. 4, 13.)

Ten miles from Paris is a grand palace, the Palace of Versailles, whose gardens are the most beautiful in Europe. (116. 9.)

Lyon is the second city of France in size and the first in manufactures. Its silk manufacture is the greatest in the world. (116. 8.)

The chief port of France is Marseille, a strongly fortified city. It has an extensive commerce in wines and fruits, cork and anchovies.

Through Havre, the second port, is carried on the commerce with Great Britain and the United States.

Bordeaux is the chief wine-shipping port. It has a fine harbor. (116. 10, 11, 12; 68. 10; 75. 7.)

Corsica. — Corsica, the fourth island of the Mediterranean in size, belongs to France. It is a rugged, forest-covered, mountainous island whose inhabitants speak the Italian language.

France has extensive possessions in Africa and Indo-China. (23.)

Historical Note. — In ancient times the country now known as France was called Gallia (Gaul) and was inhabited by half-barbarous nations, chief among which were the Gauls, or Celts. Along the Mediterranean, several Greek colonies had been established; Marseille, then called Massilia, was founded by the Greeks in 600 B.C.

Julius Cæsar, the great Roman general, conquered this region between 58 and 52 B.C., and reduced it to a Roman province. See page 225. For more than 400 years the Romans ruled Gaul, and gave to the natives their civilization and a language — the Latin — that survives in a modified form as the French language. During the Roman rule, fine roadways and cities were built, and Lyon was made the capital of the province.

The Roman Empire became so great in its extent (see page 225) that its province of Gaul could not be defended against the invasion of the barbarous Teutonic tribes from the north. These tribes established themselves in Gaul in the fifth century A.D. The capital of the tribe of the Franks was founded at Paris early in the sixth century. It was from this tribe that the country afterwards received the name of France.

In the eighth century, Charlemagne (Charles the Great) became ruler of this Frankish kingdom, which comprised parts of modern France and Germany. He was a great warrior, and by 800 had extended his dominion so that its limits were the Ebro in Spain on the west, the Elbe and the

Theiss on the east, and included half of Italy together with Corsica, Sardinia, and the Balearic Isles. Charlemagne was crowned by the Pope as "Emperor of the West."

His successors were unable to maintain the kingdom which he had built up. In 843 a treaty was made at Verdun, by which France, Germany, and Italy became separate states.

France grew rapidly in power despite the many wars in which she engaged.

Toward the close of the eighteenth century occurred the great French Revolution, an uprising of the people of France against the nobility. At its close France was a republic, but the republic lasted only four years.

Napoleon Bonaparte became consul and real ruler of France in 1799, and was crowned Emperor in 1804.

For fifteen years Napoleon was the chief figure in the history of all Europe. In 1811 he had by force of arms extended the French Empire from the borders of Denmark to Naples, had established his kinsmen upon many neighboring thrones, and held under his subjection the German states, the Swiss Confederation, and Austria.

Napoleon's defeat began in Russia (see page 249). All the powers of Europe combined against him, and captured Paris.

At the battle of Waterloo, in 1815, the English and Prussians were victorious, and they restored to the throne a descendant of the old line of kings.

Napoleon was exiled to the island of St. Helena, where at the end of six years he died.

In 1852, Napoleon III., a nephew of the great Napoleon, was proclaimed Emperor of France, after a brief term as president of a second republic, which had lasted but a short time. In 1870, jealous of the greatness of Prussia, he declared war against that country.

In this war the Germans were victorious, and the French were forced to surrender to Prussia the provinces of Alsace and Lorraine, with the important cities of Metz and Strassburg. Another result of the war was the establishment of the republic in France which has continued until the present time.

101. Germany.

Size. — Germany is the fourth country of Europe in size. Although only about four-fifths as large as Texas, its population is four-fifths that of the United States.

Relief. — The land of Germany slopes gradually northward from the Alps to the Baltic and North Seas. Lower Germany, or the great plains of the north, contrasts strikingly with Upper Germany or the mountainous region of the center and south. A large part of the plains consists of sandy tracts with occasional deposits of peat, while the rest is moderately fertile. (55; 125. 6.)

Rivers and Canals. — Germany has seven large rivers and their tributaries, besides numerous canals.

A ship canal from the mouth of the Elbe in the North Sea to Kiel on the Baltic has recently been constructed, which greatly increases the importance of the Baltic ports. It avoids the dangerous passage around the peninsula of Denmark, and is deep enough to float the largest ships.

Products. — Although the greater part of the soil of Germany is poor, this is an important agricultural country, for the farmers are very industrious. Hops and beet sugar are exported.

The mountain regions are covered with forests, and are rich in nearly all kinds of minerals. Coal and iron are the minerals mined in largest quantities. The production of salt is increasing. Nearly one-half of the zinc produced in the world comes from Germany. England and the United States alone surpass Germany in the manufacture of steel. Germany is first in the manufacture of chemicals.

Industries. — The most important of German industries are the manufactures of iron and steel, linen and woolen goods. Cotton and silk goods are also manufactured. Pianos and scientific instruments, porcelain, glass, chemicals, toys, dolls, wooden clocks, and various articles of wood-carving are specialties of German industry.

Within the last twenty years the foreign commerce of Germany has grown more rapidly than that of any other country of Europe, and Germany is one of the most industrial and commercial, as well as one of the most powerful and cultivated, of nations. Notice its foreign possessions. (23.)

Education. — Because of superior schools, the people of Germany are as a class better educated than those of the other European countries.

Army. — A French writer has said that "war is the natural industry of Germany." The Empire now stands at the head of the military powers of Europe, and is abundantly able to maintain its position.

In times of peace its army numbers half a million. Every young German may be selected by lot to serve from one to three years in the army or navy.

The Emperor of Germany.

Divisions. — The German Empire consists of four kingdoms, Prussia, Bavaria, Saxony, and Würtemberg, and twenty-two other states. The king of Prussia is the Emperor of Germany. (66. 1.)

Cities. — Berlin, the capital, has a population of over a million and a half, and is the third city of Europe in size. Its position, almost equally distant from the Elbe and the Oder, the Baltic and the North Seas, is very favorable to its growth.

Berlin calls itself the "City of Intelligence." Its museums, its theaters, its library, its university, its scientific establishments, its laboratories, its special schools, its numerous journals and reviews, make it the intellectual metropolis of Germany. (124. 2, 4; 125. 10; 71. 12; 75. 10; 76. 5; 77. 5.)

Hamburg is the second port of the continent, and the second German city in size. Although several miles from the mouth of the Elbe, the tide enables the largest ocean vessels to reach its docks. (124. 3.)

Rath's Thor (Munich).

Leipzig is the center of the book trade of Germany, and it is the largest leather market in the world.

Bremen is second only to Hamburg as a maritime city of Germany, but its harbor is becoming shallow.

Frankfort-on-Main is the great money market of Germany. (124. 6; 125. 1; 71. 13.)

Munich is a great educational, commercial, and manufacturing center. (124. 8, 1; 69. 6; 75. 3, 8.)

Historical Note. — Germania was the name given by the Romans to the region but little known to them, lying between the Rhine and the Vistula, the Danube River and the Baltic and North Seas. It was early occupied by many Teutonic tribes, who were also scattered over the Scandinavian countries.

Between the tribes of Germania and the Romans many wars were waged, and the latter for a time held considerable possessions in Germania. They built fortresses along this frontier, and at this period towns sprang up which have since become the cities of Augsburg, Ratisbon, Strassburg, Mayence, Worms, Cologne, Vienna.

In the fourth century vast hordes of barbarians, called Huns, came from the steppes of Asia and invaded Germania. Some of the German

tribes were driven westward and southward, and in their turn took possession of other territory. The fifth century saw the Franks, a German tribe, established in France, Spain, and Italy, having overthrown the Roman Empire. (208.) Other Germanic tribes, as you have learned, had invaded England.

Several German cities — Bremen, Halle, Magdeburg, Hamburg — owe their founding at this period to missionaries from France.

The Treaty of Verdun (843) separated Germany from the other countries, and for the first time there was a king whose rule included Germany alone. Under his dominion were many practically independent realms, however, and the unity of Germany was long hindered, not only by wars with neighboring powers, but by the two facts that Germany has no natural limits, and that its relief has naturally divided it into many sections.

Many were the wars during the Middle Ages in which the Germans engaged, both among themselves and against foreign foes. You have already learned something about the Napoleonic wars.

Prussia finally gained the ascendency over the other German states, and in 1871, at the conclusion of the war with France, the king of Prussia was proclaimed, at Versailles, Emperor of Germany.

102. Austria-Hungary.

Size. — Austria-Hungary ranks third among the European states in area, Russia and the peninsula of Norway and Sweden being larger.

Relief. — This country has been very fittingly called the "Empire of the Danube," since it lies for the most part within the basin of that river. Except in the south, the kingdom is almost encircled by mountains; in the east are the Carpathian Mountains, in the north the mountains of Bohemia, and in the west the Alps of the Tyrol. (55.)

Products. — Agriculture is the chief industry. The lower lands are among the most fertile portions of Europe, and if better methods of farming were in general use, they would be still more productive. Cattle and sheep are extensively raised. Hunting is still an important occupation in the forests, which cover about one-fourth of the area.

The Emperor of Austria-Hungary.

Some of the mountains in mineral wealth are the richest of all Europe. Iron, coal, quicksilver, and salt are the most important products.

Manufactures. — The chief manufactures are cotton and woolen goods, and glassware.

Kingdoms. — Austria and Hungary are two distinct kingdoms, each having its own parliament and laws, but they are united under one ruler and have a common army and navy.

Peoples. — No common bond of race and language unites the inhabitants of the Austro-Hungarian monarchy, for it is a land of many peoples and languages. In Austria proper the Germans are the dominant race, and in Hungary the Hungarians or Magyars have political power, but nearly half of the entire population of the kingdom are Slavs. (131. 1, 6, 7, 9.)

The people of the Tyrol, one of the many divisions of the kingdom, are like the Swiss in dress, manners, and occupations, and the scenery of Tyrol resembles that of Switzerland, though on a smaller scale.

Cities. — Vienna is the capital of the kingdom, and is the fourth city of Europe in size. It has over a million inhabitants. (131. 5, 8; 77. 14.)

The artisans of Vienna excel in the manufacture of objects of ivory, leather, paper, and metal. Vienna carries on a great trade with the East.

The capital of Hungary is Budapest, which consists of two cities on opposite banks of the Danube united into one. It has an extensive trade. (131. 3.)

Prague, in Bohemia, is a fine city, appropriately called the "town of the hundred towers." (131. 4.)

Trieste, on the Gulf of Trieste at the head of the Adriatic Sea, is the chief seaport of Austria.

Historical Note. — Austria and Hungary were provinces of the Roman Empire, and even then Vienna was an important place. After the fall of Rome these provinces were overrun and conquered by one barbaric horde after another, who came from the regions about the Caspian Sea.

The foundation of the present empire of Austria was laid by Charlemagne. Toward the close of the eighth century he drove farther east the tribe then in possession, and made Austria a frontier province of Germany. The German name given the province was Oester-reich, which means Eastern Realm.

Among the tribes which took possession of these early Roman provinces were the Huns, and they have given to part of the country the name of Hungary. At the close of the ninth century came the Magyars, a people allied to the Lapps and Finns. Hungary came under the rule of the Austrians in 1526.

When war arose between Prussia and Austria for supremacy in Germany, Prussia, as you have learned, was victorious, and since then Austria has had no connection with Germany. Soon after this war Austria was forced to acknowledge the independence of Hungary in all matters pertaining to self-government.

103. The Balkan Peninsula.

Position. — The word Balkan is the Turkish name for mountain, and it explains the character of the southeastern peninsula of Europe. The Balkan peninsula extends from the Adriatic to the Black Sea. A part of this peninsula is hardly better known than the wilds of Africa. (55.)

Divisions. — For several centuries, this entire peninsula was subject to the Turks, but they have been gradually losing their power here.

Bosnia, the northwestern mountain region of the peninsula, is now under the protection of Austria.

The three states of Rumania, Servia, and Montenegro have obtained complete independence.

A Rumanian Peasant Girl.

Montenegro. — Montenegro is a wild, mountainous, little country, inhabited by a brave, but only partially civilized, people. It has no town larger than a village.

Servia. — Servia is a mountainous country about as large as Switzerland. In the

forests of oak and walnut which cover half the country, swine are raised. The fortress of Belgrade on the Danube is the capital.

Rumania. — The kingdom of Rumania is a continuation, in fact, of the rich pastoral plains of Russia, and cattle-rearing and corn-growing are almost the only industries. The mass of the people live in great poverty. (131. 2.)

Bukharest, its capital, is an oriental town, — a mixture of huts, palaces, and courtyards. Its inhabitants call it the "Paris of the Orient."

Bulgaria. — Bulgaria is nearly independent of Turkey. (73. 10.)

Its capital is Sofia.

Prince of Bulgaria.

104. Turkey.

Extent. — The Ottoman Empire, or Empire of the Turks, comprises not only Turkey in Europe, but also Turkey in Asia and tributary territories in Africa. (23; 55; 57; 133.)

The islands of Crete and Rhodes belong to Turkey.

Products. — Turkey holds a very low rank among European nations, although it is a country of great natural resources. The mines and the fertile fields are neglected, for the people are lazy and ignorant, and possess only the rudest tools. The transportation of goods is made chiefly on pack-horses, as the roads are in a miserable state. Goats and sheep are exceedingly numerous. Vineyards and cornfields abound. (72. 14.)

Manufactures. — Turkish carpets are famous, as is also their attar of roses, a perfume manufactured from roses. Olive oil is the staple product of Crete.

Cities. — Constantinople, the capital of Turkey, has about 900,000 inhabitants.

Its situation is perhaps the finest of all the cities of the world. Located upon the Bosporus, the narrow strait between the Black Sea and the Sea of Marmora, Constantinople commands the traffic of eastern Europe and Asia Minor. (67. 7, 8.)

The Sultan of Turkey.

An arm or inlet of the Bosporus, called the Golden Horn, extends five miles into the land on the European coast and forms for Constantinople one of the safest and most spacious harbors in the world. (133. 9, 11.)

Historical Note. — The Turks were once a small tribe living south of the Altai Mountains. Driven out by war, they came into Asia Minor, where they were allotted a small territory. They were fierce and warlike, and gradually extended their dominion until 400 years ago they held sway from the Caspian Sea to the Persian Gulf, from the Persian Gulf across Arabia and northern Africa to the Atlantic, and in Europe from the Sea of Azov to the Adriatic. Trace these boundaries on the map.

Their chief city was Constantinople which they had captured in 1453, thus putting an end to the Eastern Roman or Byzantine Empire. See page 225. They had for many years been victorious over all their enemies, and were passing up the Danube into central Europe. They had created a navy which controlled the Mediterranean. They gained possession of Hungary, and held it for a century.

Their onward march into Europe was checked by their failure to capture Vienna, to which they had laid siege. They first came into collision with the Russians in 1570, and since that time have suffered many defeats at the hands of the Russians, who have taken from them the

Crimea and the northwest shores of the Black Sea. Austria has possessed itself of the Danube. Greece secured its independence in 1829; and since that time Rumania, Servia, and Montenegro have likewise become independent. The African dependencies of Turkey, except Tripoli and Egypt, have dropped from its grasp, for Turkey has become a weak power.

Its eastern limit is now a line from the Persian Gulf to the Black Sea, rather than the Caspian, as heretofore. The nations of Europe no longer fear the Turks, but aid the Empire with advice, money, and arms to prevent it from falling into the possession of Russia, its long-time enemy.

105. Greece.

Position and Relief. — The extremity of the Balkan peninsula is occupied by Greece. It consists of a northern, or continental portion, and of the peninsula of the Morea, joined to the mainland by the Isthmus of Corinth. The Ionian Islands and a large number of the islands of the Ægean Sea also form part of Greece. (55; 132. 7, 8, 9, 10, 2.)

The surface of Greece is everywhere mountainous, and its scenery presents striking views of seas and rugged heights. The highest point of all Greece is the famous Mount Olympus.

Size. — The whole country of Greece is about the size of Maine, and all its inhabitants together number no more than those of the city of Paris. But small as it is in area, it is great on account of the part it has had in the history of freedom, of literature, of art, and of all kinds of learning.

Products. — Because of the mountainous character of the country, only about one-third of its area is capable of cultivation, and not half of this available land is tilled. The method of agriculture is still very primitive. The most important product is currants; next in importance are honey, olives, and grapes.

Paros has fine marble from which famous statues have been sculptured, but its quarries are little worked owing to the lack of railroads and good roads.

The King of Greece.

Commerce. — The maritime trade of Greece is increasing. No part of the country is more than forty miles from the sea, and all along its coast are fine natural harbors.

The Corinthian Ship Canal, recently opened, will be of great commercial importance. Why?

Cities. — Piræus, the chief manufacturing town of Greece, will profit by this canal, for owing to its position it will become the chief harbor of export and import. It is the port of Athens, joined to it by the only seven miles of railroad in the country. Two thousand years ago long walls connected the two places. (132. 1.)

Athens, the capital of the kingdom, is the largest city. Twenty centuries ago Athens was the "School of Greece," and its splendid ruins are still the school of the whole world.

Not even the ruins of ancient greatness at Rome are more famous than those of Athens. A rocky height overlooking the city, called the Acropolis, or citadel of Athens, bears on its summit the ruins of several temples of ancient Greece, chief among them being the Parthenon, the finest production of Greek architecture. (132. 3, 5.)

Historical Note. — The names Greece and Greeks were given to the southern part of the Balkan peninsula and its people by the Romans. In the

Minarets of a Mosque.

Greek language the name for this country is Hellas, and the people are the Hellenes, descendants of Hellen, the mythical founder of their race.

An account of the deeds of the heroes and a vivid picture of the manners and customs of early Greek life are given in the two Greek classics, the Iliad and the Odyssey.

You have noticed what a multitude of bays and inlets of the Mediterranean break up the coasts of Greece into peninsulas and islands, bringing almost every part of the country near the seacoast. The Hellenes were thus naturally led to seek the neighboring islands of the Ægean Sea, and the coasts of Egypt and Phœnicia. This contact with these two earlier civilizations made the Hellenes the earliest civilized people of Europe.

Numerous ridges of mountains divide Greece into many small, isolated regions, hence independent states arose, and one after another gained ascendency over the others.

The Persians several times waged war against Greece. In the third century B.C., under Alexander the Great, the Greeks conquered Persia and Egypt, and gained control of all western Asia. East of Persia lay an unknown land, which Alexander traversed as far as the Sutlej River. He wished to continue his journey, for he thought he would soon reach the eastern limit of the continent, but his soldiers refused to advance farther.

After Alexander's death, this great empire fell to pieces. Greece was conquered by Rome, and in 146 B.C. became a Roman province. It continued under the rule of the Byzantine Empire till the overthrow of Constantinople, when it fell into the power of the Turks. After over three hundred years of Turkish dominion, the Greeks, aided by other European powers, succeeded in gaining their independence.

106. Italy.

Relief. — Italy in its physical features is divided into two distinct parts: the great plain of the north, surrounded like an amphitheater by the summits of the Alps and of the Apennines; and the long, narrow peninsula proper, through which the Apennines extend, sending out branches towards both coasts.

The plain of the north is the great cross-road where meet all the routes which cross the Alps in coming from France, Switzerland, Germany, or Austria.

Westward and nearly parallel with the southern part of the Apennine Range appears a chain of volcanoes. What have you learned about one of them? (129. 1, 3, 4, 7.)

Farther south is the volcanic group of the Lipari Islands with the volcano of Stromboli, called the "Lighthouse of the Mediterranean," because it is always burning. On the island of Sicily is Mount Etna, the highest of European volcanoes.

Climate. — What is the climate of the different portions of Italy? On the Mediterranean slope around the coasts of the Gulf of Genoa, called the Riviera, the climate is especially delightful.

There is a singular clearness of atmosphere in Italy that greatly enhances the beauty of the landscape. In many districts, however, malaria is so prevalent that even the most fertile tracts are almost deserted.

Rivers. — The northern plain is watered by the Po, the only great river of Italy. The Po is fed by many tributaries, and is ever carrying fresh material down from the heights to add to its delta in the Adriatic. In this way the plain has extended many miles eastward since the old port of Adria, now an inland town, gave its name to the sea.

Products. — Scarcely any part of the world is so covered with irrigating canals as the plain of the north. It appears like a great garden, and is one of the most densely peopled portions of Europe. Cereals, especially rice, are raised. Mul-

berry trees and vineyards abound. This is the silk region of Italy.

The agricultural products of the rest of Italy are insufficient and poverty is widespread, so that the people are forced to emigrate in large numbers.

The slopes and valleys of the Alps and of the Apennines are covered with olive trees and chestnuts, which yield a large part of the food of the people.

The Italians are very fond of olive oil and of macaroni, a preparation made from wheat. Italy produces more olive oil than any other country. Oranges and lemons are also exported. (129. 6.)

People. — In northern Italy the peasants are intelligent and industrious. In southern Italy they are ignorant, and beggars are numerous. (128. 2, 5, 7, 9.)

Cities. — Italy has been inhabited for centuries by civilized people; and no other country contains so many cities remarkable for their historical associations. (71. 4; 129. 10.)

Rome, the capital, is built on seven hills along the banks of the "yellow Tiber." Two thousand years ago Rome had more than a million inhabitants, and gloried in the title of "Mistress of the World." To-day it is the second city of Italy in size, and its greatness is chiefly because of its past. It contains more objects of historic interest than any other city in the world. (130.)

Rome has the largest palace and the largest Christian church. The palace, called the Vatican, is the residence of the Pope, the head of the Roman Catholic Church. The largest church is the Cathedral of St. Peter. (130. 2.)

The grandest ruin of Rome is that of the Coliseum, once used as a theater or circus, and large enough to hold 90,000 people. The Pantheon, built A.D. 27, is one of the best preserved of the old buildings. The ruins of the Forum, with its walls, columns, and temples, remain to bear witness of great events in the history of Rome. (130. 5, 6, 8.)

The largest city of Italy is Naples. It is a very busy port, situated on the beautiful Bay of Naples, within sight of the volcano of Mount Vesuvius. (128. 8.)

Florence, "The Beautiful," as the Italians call it, has the finest collections of paintings in the world.

Amerigo Vespucci, who gave his name to the New World, was a Florentine. (129. 2, 11; 71. 2; 74. 6.)

Venice, the "Queen of the Adriatic," is built on many islands, and the foundations of the houses are piles and stone. Canals form the streets, and boats called gondolas are the carriages. One can go about the city on foot, however, by bridges over the canals, and by narrow pathways along the sides of the canals. (128. 4, 6, 10; 75. 2; 78. 10.)

St. Mark's Cathedral, the walls of which are of inlaid marble, is the finest building in Venice. (69. 9; 82. 8.)

The manufacture of beads and mosaics is an important industry.

Genoa, the birthplace of Columbus and of John Cabot, is the chief seaport and commercial city of Italy. The Italians call it "The Superb," or "The Proud," for even among Italian cities it is famous for its palaces. (71. 17; 78. 8.)

Milan is the third city of Italy in size, and ranks next to Genoa in commercial importance. It has large silk, velvet, and woolen manufactures.

Its beautiful Gothic cathedral, built entirely of marble, is called by the people of Milan the wonder of the world. (69. 10.)

Within a few miles of Carrara is a bare, mountainous range that contains quarries of beautiful marble.

San Marino. — On the northeastern slope of the Apennines there is the oldest and smallest independent republic of the world, San Marino, 32 square miles in area.

Islands. — Several Mediterranean islands, Sicily, Sardinia, the Lipari Islands, Elba, and others, belong to Italy. (132. 11.)

For its foreign possessions see map. (23.)

The Island of Malta, south of Sicily, belongs to England, and here are the headquarters of the British Mediterranean fleet. (132. 4, 6.)

Historical Note. — The Greeks early peopled the southern part of the Italian peninsula and called it Magna Græcia, or Great Greece. The Latins held Latium, a small district on the western coast of central Italy. Their chief city was Rome. Various other peoples occupied the rest of the peninsula.

The Romans soon came into conflict with these people far and near, and after many centuries of strife gained control of the entire peninsula. Then followed wars of foreign conquest. When Augustus Cæsar was proclaimed emperor in 27 B.C., his empire included Spain and Portugal and what was then the civilized world in the basin of the Mediterranean in Europe, Asia, and Africa.

During the first century of the Christian era, Britain was added as a province.

At the close of the fourth century the Roman Empire was divided into an Eastern and a Western Empire.

About the fate of the Eastern Empire you have learned in the history of Turkey.

The Western Empire was limited to Italy and its western provinces, and soon came to an end. Various Teutonic tribes had gained possession of province after province, and in 476 A.D. Rome fell into their power. During the reign of Charlemagne, Italy was again united, but remained so only until his death.

The centuries following brought to Italy conflicts and terrible wars. The Italians of the north were at war with those of the south.

The cities gained territory around them and, as republics, possessed great power. Venice, Genoa, and Florence were the chief of these republics.

During the Crusades, Venice and Genoa grew very rich by building ships, transporting the Crusaders to Palestine, and bringing back the products of the East. Florence owed her growth in wealth and power to her manufactures.

The discovery of the New World and of the route to India around the Cape of Good Hope deprived Italy of her commercial importance; for the commerce of the east and west passed to the more western nations of Europe.

Italy was long the scene of warfare carried on by foreign powers. It was not till 1870 that Italy became a united kingdom.

107. Switzerland

Position. — The little Republic of Switzerland occupies a very important place among the countries of Europe. A barrier of separation in times of war, it is a bond of union during peace.

From Italy — the roadway from the extreme East — to the ports of France, Belgium, The Netherlands, and Germany there is no direct and quick route that does not cross Switzerland.

Tunnels. — Four tunnels have been made through the Alps: the Mont Cenis connects Italy and France; the St. Gothard and Simplon, Switzerland and Italy; the Arlberg, Switzerland and Austria.

Relief. — Switzerland is entirely an inland country, and in size is only about half as large as Maine. It is the most mountainous country of Europe. Rocks, glaciers, forests, and mountain pastures cover two-thirds of its surface. Within this country rise the most important ranges of the Alps. (126; 127.)

Lakes. — Here are numerous lakes, famous for their clearness and the beauty of their scenery. The largest of these are Lakes Geneva, Constance, Neuchatel, Lucerne, and Zürich. (126. 1.)

The magnificent mountain and lake scenery attracts every year to Switzerland crowds of tourists from all parts of the world, who contribute largely to the revenue of the country.

Cantons. — Switzerland consists of twenty-two districts, called cantons, which form a confederated republic. What do you know about its government?

Industries. — Most of the people are herdsmen and shepherds who tend their cattle and goats, look after their dairies, and make excellent cheese. (126. 7; 64. 14.)

Although Switzerland is forced to import almost all the raw

material required for its manufactures, and has no natural facilities for commerce, its trade is nevertheless considerable.

Much of the raw silk which the peasants weave comes from far-away China, and after being woven in these Alpine villages is exported to us. Cotton is also woven.

Clock Tower, Berne.

The Swiss are famous for their manufacture of watches and clocks, and for all kinds of articles beautifully carved out of wood.

Cities. — Berne, the capital, is surrounded on three sides by the winding River Aar. The largest city is Zürich. It is built on the lake of the same name, and is an important manufacturing city. (127. 4.)

Berne, Switzerland.

Geneva, the second city, is built at one end of Lake Geneva, where the Rhone leaves the lake. (127. 7.)

Basel, near the head of navigation on the Rhine, is almost as large as Geneva.

Historical Note. — The people who early occupied the valleys of the Alps were naturally involved in the wars of their neighbors. To have this mountainous country as a defense against the Teutonic, or German, tribes north of the Alps was a great advantage to the Romans in Italy, who held it for some time as a province of their great Roman Empire.

Under Charlemagne (see page 208) it formed part of the Frankish Empire, and in the eleventh century it was joined to the German Empire. The rulers placed over the Swiss cantons tried to govern them despotically. To such rule the brave Swiss people would not submit, and at the close of the thirteenth century three of the cantons united in a war for independence. This union was the beginning of the present confederation. Many wars were waged in the succeeding centuries till in 1648 (by the Treaty of Westphalia) Switzerland became wholly independent of the German Empire.

The geographical conditions of the country have naturally divided it into many separate cantons, and the difference of language — for Germans, French, and Italians make up the Swiss nationality — has tended to still further separate one part from another. It was the need of defense against their common enemies which drew the cantons together, and now it is to the interest of each of their more powerful neighbors that they maintain their bravely bought freedom. Can you explain why?

108. Spain.

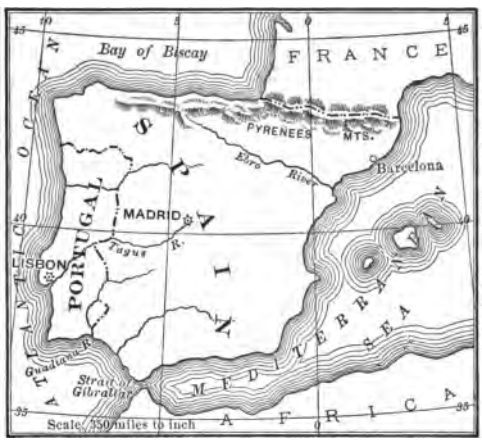
Position. — There is no other country in Europe with natural limits so marked as the Iberian peninsula, or Spain and Portugal. Separated from France by the Pyrenees, this peninsula is surrounded on all other sides by ocean and sea.

Relief. — Spain consists of a lofty plateau, from 2000 to 3000 feet above sea-level, surrounded on all sides by mountainous terraces, which sometimes immediately border the sea, and sometimes have a narrow plain or sandy beach at their foot. This plateau is crossed from east to west by several mountain ridges, and between them lie the valleys of the rivers, the Douro, Tagus, and others. The Cantabrian Mountains in the north are a westward continuation of the Pyrenees.

Climate. — The climate is rigorous. The summers are hot, the winters are cold, and the daily changes are often great.

In parts of the northwest the rainfall is the heaviest in Europe, while during some years in parts of the east and southeast no rain whatever falls.

People. — The Spaniard is usually a sober but indolent man. The nobility is exceedingly numerous. The lower nobility are usually quite poor and live in uncomfortable, filthy homes. Beggars abound. (115. 1, 3, 8, 10.)



Former Greatness. — The country now seems nearly two centuries behind the other nations of Europe, except Turkey, and it is difficult to realize that it once led them all in enterprise and commerce. Columbus went forth from Spain to discover a New World, Cortez to conquer Mexico, and Pizarro to conquer Peru. (115. 11; 78. 8; 71. 17.)

The discovery of a New World, however, proved disastrous to Spain, for it was too small a country to bear the loss of so many men who daringly went to found new colonies. The riches which were brought from Peru and Mexico contributed also to Spain's rapid decay, for they encouraged the natural indolence of its people. When these colonies became independent, the sources of revenue failed, and complete stagnation resulted. Agriculture was neglected, workshops were closed, and mines deserted. As late as 1848 there was not a single

mile of railroad in the country. Since that time improvements have taken place.

Products. — There are large deposits of coal and iron in Spain, yet the mines are so poorly worked that these minerals are imported from Belgium and England. The most important mines are those of quicksilver and copper. Lead, tin, and salt are abundant.

Agriculture is the most important industry, yet a great part of Spain is uncultivated. The merino sheep of Spain furnish valuable wool. The export of wine is considerable, and other exports are olive oil, minerals, fruits, and wool.

Manufactures. — Cotton is the chief article manufactured, though silk stuffs are also woven. Corks and paper are made in large quantities.

Colonies. — The islands of Cuba and Puerto Rico of the West Indies, the Philippine Islands and other islands of Asia, besides small possessions in Africa, belong to Spain. (23.)

Cities. — Madrid, the capital and largest city of Spain, is situated near the center of the country. Although only five degrees north of Africa, the winters are sometimes exceedingly severe.

Barcelona, the second city in size, a large port, and the most important manufacturing city, has a beautiful situation upon the Mediterranean coast. (115. 5, 7, 9.)

Cadiz, the chief port, and an important commercial city, is one of the most ancient towns of Europe. By whom and when was it founded? See page 195.

Malaga, a southern seaport, has a wonderfully dry and uniform climate, and as a resort for invalids is superior to any city, even in France or Italy. (69. 1; 74. 3.)

Granada lies at the foot of the Sierra Nevadas. The Moors call it the "Queen of Cities."

A fortified suburb of Granada is Alhambra, where stand the exquisite ruins of the palace of the ancient Moorish kings, one of the most wonderful buildings in the world. (115. 2, 12.)

Gibraltar, the most strongly fortified city in the world, situated at the base of a rock over a thousand feet high, belongs to the British. It is called the "Key to the Mediterranean." (115. 4.)

Historical Note. — The southwestern peninsula of Europe was early visited by the Phœnicians, who were attracted far into the interior by the rich mines in the mountains.

When the Greeks became acquainted with this part of the Mediterranean they called it the "world's end."

In the third century B.C., the Carthaginians had established themselves in half of the peninsula. Cartagena was their capital. As a result of the wars between Rome and Carthage, this part of Spain became a Roman province. The Roman conquest was a slow one, however, because of the mountains and forests of the interior. The Roman conquest was completed by the beginning of the Christian Era. There were many flourishing cities along the Mediterranean coast, and Spain became more thoroughly Romanized than any other province of the great Empire outside of Italy itself.

During the general migration of Teutonic tribes in the fifth century, Spain fell into the hands of the Goths, whose dominion lasted only till the invasion of the Arabs, or Moors, early in the eighth century. The last of the Mohammedan conquerors were not expelled till seven centuries later, in the same year that America was discovered by Columbus.

During the Arabic dominion Spain rose to be a great power, and in the tenth century it was the center of learning in Europe. Many old Spanish towns contain beautiful remains of Moorish architecture, which tell of the grandeur of this period.

The many mountain chains of Spain divide it like a checker-board into a number of isolated regions, where have developed different political states, inhabited by people who have maintained their own peculiarities of character as well as of dialect.

The union of two of the states, Castile and Aragon, upon the marriage of Ferdinand and Isabella, was the beginning of the kingdom of Spain. What have you learned about these sovereigns? By the close of the fifteenth century, Spain, from the Pyrenees to Gibraltar, was a united kingdom.

The immense colonial empire founded in the sixteenth century in Mexico and South America was lost to the Spaniards in the nineteenth century.

109. Portugal.

Independence. — Portugal once formed a part of Spain. It was one of the kingdoms established when the Christians began to drive out the Mohammedans. Owing to the stretch of dreary country eastward from the present boundary between the two kingdoms, Portugal was able by wars and conquests to establish its independence. (55.)

The King of Portugal.

People. — The Portuguese differ essentially from the Spaniards, and they still regard the latter with hatred and jealousy, principally because in the past the Spaniards have tried to overthrow the independence of Portugal.

Former Greatness. — The Portuguese under Bartholomew Diaz rounded the Cape of Good Hope and under Vasco da Gama reached India. A large colonial empire was soon established on the Asiatic coasts.

What country of South America was first settled by the Portuguese?

Colonies. — To-day only a small part of Portugal's ancient power remains, and it is perhaps the most obscure and the least heard of, of all European powers. Its most important colonies are at the mouths of the Kongo and Zambezi Rivers in Africa. A few islands, the Azores, the Madeira, and the Cape Verd, belong to Portugal. (23.)

Products. — Only one-half the soil is cultivated. Wine is the chief export.

Cities. — Lisbon, the capital, is built upon the slopes of a low range of hills, and the beauty of its site is surpassed by that of only two other European cities, Constantinople and Naples. Its harbor is one of the finest in the world, and is large enough to hold at one time all the navies of Europe. In 1755 the greater part of the city was destroyed by an earthquake, and many thousand persons perished. (115. 6.)

Oporto, the second city in size, is the center of the trade in port wine.

110. Belgium.

Relief and Products. — Belgium is a fertile plain adapted for agriculture. In the east and southeast is the plateau of the Ardennes, with its bare rocks, one of the richest coal regions of Europe. Hence Belgium is not only an agricultural but also a mining and manufacturing country. (55.)

Commerce. — The variety and value of her manufactures and her mineral wealth have made Belgium a commercial state excelled, among European countries, only by England, France, and Germany. (119. 2, 4, 6, 8, 11.)

Belgium has no colonies, but the king of Belgium has created and directs the "International African Association," which has for its object the exploration of central Africa. This association founded the Kongo State. Stanley was sent to Africa as its agent.

People. — This is the most densely peopled country of Europe. Part of the people are Flemings, a branch of the German family, and a part are Walloons, a branch of the French. French is the language of the court and of the higher classes.

Cities. — Brussels, famous for its lace manufacture, is the capital of Belgium. (119. 5, 8.)

Ghent is situated at the junction of four rivers. It is the fourth city of Belgium in population, but the first in industry. It has extensive cotton and linen manufactures. (119. 1.)

The King of the Belgians.

It was in this city that the first English book was printed by Caxton.

Antwerp, the second city in population, is the only large seaport of Belgium, and is the most important of continental Europe. The commerce of its harbor is excelled only by that of London, Liverpool, and New York. (119. 3.)

Liège is a manufacturing city. Here steam engines, firearms, and all kinds of machinery are made, and woolen cloth is manufactured.

111. The Netherlands.

The Netherlands, a name meaning the Low Countries, is the official title of the country which is often spoken of as Holland.

Relief. — Much of the land is lower than the level of the sea, and in spite of the dikes erected as barriers to the sea, it has been frequently submerged. The Zuyder Zee is a large gulf about sixty miles in length, which was formed by the breaking of the sea into an inland lake. A chain of islands now marks the line of the former coast of the mainland. This submerged land is gradually being drained by the persevering people of the Netherlands and transformed into fertile fields. The

sea of Haarlem and many marshes have been reclaimed in like manner. (55.)

Former Greatness. — The people of the Netherlands, the Dutch, were trained by their constant struggle with the sea, and early became skilled engineers and mariners. Their soil was at first poorly adapted for agriculture, hence the riches which their country could not give them they sought from afar. They became colonizers and traders. They were the people who first settled New York. At the close of the seventeenth century, they were the true rulers of Europe, and although this supremacy has long since been lost, their country is to-day one of the richest (according to size) and most densely peopled in Europe.

Land Reclaimed from the Sea, Holland.

The Queen Regent of the Netherlands.

Canals. — The rivers of the Netherlands, with innumerable canals and ditches, intersect the country in every direction. Often half of the streets of a village are canals. The canals drain the country, changing marshy land into rich meadows. Windmills pump the water into the canals, and are also used to saw timber, grind corn, and beat hemp. These windmills, with their bright colors,

are very picturesque, but they are gradually being replaced by brick buildings with tall chimneys; for steam is doing the work of the wind. (120. 9; 78. 3.)

Products. — The Dutch are an exceedingly thrifty, hard-working people. They succeed in raising good crops of rye, wheat, oats, and other farm produce, and they export cattle, sheep, butter, and cheese. (120. 4, 6, 7.)

Commerce and Colonies. — The commerce of the Netherlands is great. Almost all the islands of the East Indies, Dutch Guiana in South America, and several of the West Indies are colonies of the Netherlands, and contribute to its commerce. (23.)

A Scene in Holland.

Cities. — Amsterdam, the largest city, was at one time the greatest port in the world. It is built on a number of small islands. The great North Holland Canal extends for fifty miles to the entrance of the Zuyder Zee. Another one, built due west to the North Sea, has greatly increased the shipping of Amsterdam. (120. 1.)

Rotterdam is now the chief port and the second city in size. It has a great foreign trade. (120. 5.)

The Hague is the capital. (120. 3.)

Utrecht is a curious old town, famous for being the place where the provinces of the Netherlands united themselves into a confederacy. (120. 2.)

Historical Note. — The term Netherlands at first included the present kingdom of the Netherlands together with Belgium and the northernmost parts of France. This region was divided and formed parts of the various kingdoms of Europe which successively held power in the central part of the continent.

In the middle of the seventeenth century (by the Treaty of Westphalia, 1648), the independence of the United Provinces of the Netherlands was acknowledged by the rest of Europe. Early in the nineteenth century, through the efforts of Napoleon, it was made a kingdom and later joined to France. The Congress of Vienna, which settled the political affairs of Europe after Napoleon's overthrow, re-established the Kingdom of Holland and joined to it Belgium, then known as the Spanish Netherlands. The differences of nationality and of language, of religion and of customs, between the Dutch and the Belgians, were too great, and in 1830 they separated into two of the smallest states of Europe.

112. The Scandinavian Countries.

Position. — Norway, Sweden, and Denmark comprise the Scandinavian countries. They occupy the two peninsulas west of the Baltic, which probably were at one time united, while the Baltic was an inland sea. Their people speak languages similar, and the nations have had in the main a common history. (53.)

Scandinavian Peninsula. — This peninsula is the largest one of Europe. It comprises two kingdoms, Norway and Sweden, separated by long ranges of mountains which extend nearly the whole length of the peninsula. Norway and Sweden, like Austria and Hungary, have separate parlia-

ments and laws, but are united as one kingdom under the same king. (120. 8.)

Relief of Norway. — Norway is a plateau descending abruptly towards the ocean, with snow-covered mountains, and deep and narrow valleys. All along the shore of the Atlantic, fiords, filled with such clear water that one can see the bottom through a depth of 100 feet, reach far inland. (121. 1, 2, 8, 9.)

The King of Norway and Sweden.

The sides of the fiords are steep walls sometimes 1000 feet high, over which waterfalls leap into the abyss; or glaciers, the largest in Europe, descend through these arms of the sea nearly to the water's edge.

Relief of Sweden. — The surface of Sweden is very different from that of Norway. It descends from the mountains in the west by gentle slopes to the shores of the Baltic, and forms part of the great European plain. Instead of fiords, Sweden has mountain lakes, narrow and deep.

Rivers. — The many rivers of Scandinavia are useless for navigation, as they are so broken by rapids and falls, but they float down the valuable timber of the forests, and the rapids give abundant mill power. (74. 10; 82. 5.)

Islands. — Innumerable islands of every size skirt both shores of the peninsula. Sweden is said to have two coasts, because the little rocky islands seem to form an outer coast; between them and the mainland the water is smooth, no matter how rough may be the sea beyond.

Not many of these islands are inhabited, but off the coast of Norway there are a few which at certain times of the year

present a very busy scene. Upon the Lofoten Isles immense quantities of cod, herrings, and lobsters are caught.

In the passages between these islands there are numerous so-called whirlpools, the most famous of them being the Maelstrom. It is caused by a tremendous current running in direction opposite to the wind. Where the whirlpool is formed, the water suddenly changes from 20 fathoms to 200 fathoms deep.

Climate. — During a considerable part of the year the Baltic is frozen, and all the ports of Sweden are closed, while the western coast of Norway, even to the North Cape, is free from ice all the year round. Can you explain this? There is no other land within or near the Arctic Circle that has so temperate a climate as the coast of Norway. On the opposite side of the Arctic Ocean, in the same latitude, is Greenland with its ice fields. At North Cape the winter is less severe than at Quebec, 25 degrees nearer the equator.

In the part of the peninsula lying within the Arctic Ocean, the distribution of daylight and darkness is peculiar. From the last of May to the last of July there is one long day, for the sun is above the horizon all that time. From the middle of November to the middle of January the sun never rises.

People. — The people who dwell in this northern peninsula are descendants of the Northmen, who early visited Greenland. They are of middle stature, hardy and kind-hearted, fair-haired and blue-eyed. (121. 3, 5; 73. 12.)

Norway. — There are scarcely any illiterate people in Norway. Here and in Sweden, also, education is compulsory. Ignorance is punished as a crime.

The fisheries give occupation and food to a large part of the population of Norway. There are valuable forests which make this one of the leading timber-producing countries of the world. (78. 7.)

Owing to the shortness of the summer and the poor quality

of the land, agriculture is not profitable, except in the extreme south and in deep valleys, but cattle raising is carried on extensively everywhere.

In proportion to the number of inhabitants, Norway has more sailors than any other country. Its fleet is the third in size in Europe, and its ocean-carrying trade is extensive.

Kristiania, the capital of Norway, is picturesquely situated among pine-clad hills at the head of a fiord. (121. 4, 6, 7, 8.)

A Dairymaid of Norway.

The commercial town is Bergen.

Hammerfest and Tromsoe are remarkable as the most northerly ports of the world that are open to navigation all the year round.

Sweden. — The people of Sweden are engaged in farming, grazing, timber cutting, and mining. There are copper, silver, and iron mines here. From the iron, the finest steel in the world is made. Spinning of cotton and woolen yarns is an increasing industry.

Stockholm, the capital, has a beautiful situation on a lake whose channels open to the Baltic through a maze of rocks and tree-covered islets. (120. 10, 11.)

Denmark. — Denmark includes the peninsula of Jutland, south of Norway, the only important peninsula in the world that points northward, and the archipelago of islands which lie east of it in the Baltic. The far-off Faroe Islands, Iceland, and Greenland also belong to Denmark. (23.)

The sea around the coast of Jutland is shallow and difficult of approach. The western shore is one of the most dangerous in the world, and the only good harbor is that of Copenhagen, the capital and only large city. (119. 9; 63. 11.)

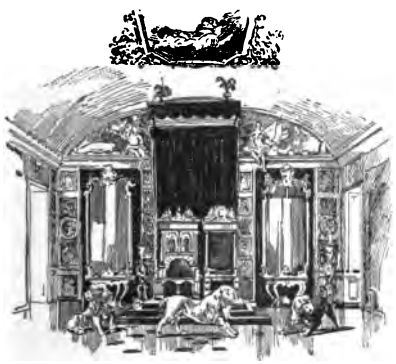
The whole land is very low and flat. Dunes of drift sand extend along the west coast. The inhabitants there are fishermen. The west and center of the peninsula are bare, sandy heaths, with here and there "holms," or islands, of more cultivable land. These heaths and marsh lands support herds of cattle, horses, and sheep. The eastern land is fertile.

There are fine dairy farms in Denmark, and much butter and cheese are exported.

There are very few people in Denmark that can neither read nor write. (119. 10, 7.)

The King of Denmark.

Iceland. — Iceland was settled more than a thousand years ago by people from northern Europe, and the Icelanders in turn settled Greenland.



The Throne of Denmark.

Iceland lies on the border of the Arctic Circle, and in position is part of America; but as it belongs to Denmark, it is considered one of the European islands. It is of volcanic origin. The interior is chiefly a desert plateau, covered by bare rocks, sands, lava beds, glacier fields, mosses, and a little good pasture land. There are many volcanoes and geysers. The most famous volcano is Hekla.

The inhabited part of the island is along the coast, where

grass and dwarfed trees are found. Most of the fuel is obtained from the driftwood brought by the Polar current from the Siberian coasts.

Oats and barley will sometimes grow, but they seldom have a chance to ripen. Sheep, cattle and ponies form the chief wealth of the island. The cod-fisheries on the banks of the south coast are valuable.

Reykjavik.

Eider ducks and seals are taken in large numbers.

Sulphur, Iceland spar, ponies, wool, eider down and feathers are exported.

The capital is Reykjavik, which has an excellent harbor.

Historical Note. — Scandinavia is a name originally given by the Romans to what they supposed to be a large island north of Germany.

You have learned about the conquests of the Normans in France and in England. Later the Danes conquered Normandy and also invaded England.

Authentic history of the Scandinavian countries begins in the ninth century A.D., when the many little kingdoms of Norway were united under one king.

At the close of the fourteenth century Norway, Sweden, and Denmark were united, but in 1523 Sweden became independent.

For a time, Sweden was one of the chief powers in Europe, with possessions east and south across the Baltic, but she was unable to hold them long.

In 1814, Denmark was forced to cede Norway to Sweden.

113. The Russian Empire.

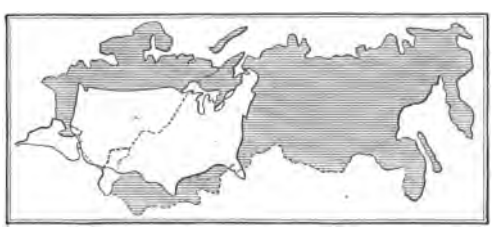
Size and Extent. — The Russian Empire is surpassed in size only by the British Empire. It covers an area twice as great as that of all Europe, and nearly equal to all North America. Compare it with the United States in the figure, page 243. In

breadth, it extends without interruption from the Baltic Sea in Europe to the Pacific Ocean on the eastern shore of Asia, a distance of 5400 miles. Through how many degrees of latitude and of longitude does it extend? (23; 53; 57.)

What is the boundary between Russia in Europe and Russia in Asia, or Siberia?

European Russia comprises about one-fourth of the entire Empire, and is itself of greater extent than all the rest of Europe.

Relief. — The whole of this empire is one vast plain, except in eastern Siberia, where it is more mountainous. The plain consists of the frozen, treeless tundras of its Arctic coastland; the immense central region of forests and fertile land which supplies Europe with grain; and the steppes (prairies) in the south.



Russian Empire and United States.

Rivers and Lakes. — No other country has so many great rivers as Russia. What are they, and where does each flow? Their headwaters are connected by canals. Russia has many large lakes: Lake Ladoga, near St. Petersburg, is the largest

lake in Europe, and Lake Baikal, 300 miles long, is the largest freshwater lake in Asia. The White Sea is closed by ice for six months in the year, the Baltic for four or five, and even in the far south the Sea of Azov is sometimes frozen over.

What do you know about the climate of Russia?

People. — The Russian Empire is more thinly peopled than any other part of Europe or Asia. Its entire population is nearly twice that of the United States. By far the greater part of the people belong to the Slavonic race. (122. 8, 9, 12.)

The Czar of Russia.

Slavonic peoples are found within the limits of the German Empire, in greater numbers within Austria-Hungary, in the Balkan Peninsula as subjects of the Turks, in Servia and Montenegro under their own independent princes, but in Russia alone have they become a great European power, having people of other races subject to them.

The Russians of Siberia, or Siberiaks as they are sometimes called, are for the most part the descendants of exiles who were sent there for political or other offenses. Now the Russian offenders are taken to the far-distant islands of Sakhalin, in the Sea of Okhotsk.

European Russia. — For two centuries and a half, the greater part of the inhabitants of Russia were serfs, belonging either to the Czar or to private individuals. It was not till 1863 that serfdom was abolished. Hence it is no wonder that the masses are without education; but great progress is now being made. (64. 7.)

Most of the people of Russia are employed in farming. Rye, barley, oats, and flax are the chief crops of the north;

wheat, hemp, tobacco, and wines, of the center and south. Black bread made from rye is the principal food of the peasantry. Timber is sent down the rivers in enormous quantities to the Baltic and White Seas. The steppes of the south are the great pasture lands of Russia; millions of sheep, cattle, horses, and swine are reared. Russian leather is everywhere famous. The export of bristles and brushes is very great. Hunting the bear, wolf, fox, deer, and sable gives employment to many. The great rivers and the Caspian and Black Seas and the Sea of Azov are rich in fish. In the Ural region there is great wealth of iron, coal, and gold, besides silver, copper, lead, and platinum.

A Gendarme of St. Petersburg.

Cities. — St. Petersburg, the capital of Russia, has over a million inhabitants. Its site was originally a swamp, but Peter the Great, about two centuries ago, chose it for his capital because it was on a gulf of the Baltic, and he wished to gain the trade of western Europe.

It is a new town in comparison with other European cities, and is built on a large scale. The streets are wide and long, and the squares and public buildings large and grand. The Winter Palace of the Czar is the largest royal palace in Europe. The pride of the city is the river Neva, the outlet of Lake Ladoga. In places it is 300 yards wide, and the water is clear and beautiful. (122. 2, 10.)

Moscow is surrounded by manufacturing villages and is the commercial city of central Russia. (122. 5, 11; 68. 8; 73. 15.)

When seen from a distance, the citadel of Moscow, called the Kremlin, is a most brilliant sight; walls, roofs, spires, and cupolas shine with red, green, white, gold, and silver. This fortress is enclosed by a stone wall. The Ivan, or bell-tower, rises far above the other towers, and has a chime

of thirty-six bells. At the base of the tower is a monster bell, justly called the "King of Bells." It looks like a large tent of bronze and has been used as a chapel holding forty people. A piece weighing eleven tons is broken out of the side, and through this hole one can enter.

It is by means of fairs that much of Russia's inland commerce is carried on. East of Moscow is the town of Nijni Novgorod, where the largest fair in the world is held, lasting for three months. So many people come from all parts of Europe and Asia that the population of forty thousand is increased to a million during fair time. Here precious metals are brought from Siberia, and tea from China. By way of Astrakhan come the silks and shawls from Asia, and from St. Petersburg the manufactured goods of western Europe and America.

Great Bell of the Kremlin, Moscow.

On the northern shore of the Black Sea is Odessa. It is strongly fortified, and is the seaport whence most of the grain and wool is exported. It is the second greatest grain market of the world. What city is the first?

Riga, on an arm of the Baltic, has a great trade in timber, hides, and tallow.

Warsaw is the capital of that division of Russia called Poland, and Kief is one of the Russian holy cities.

One division of Russia, called the Lieutenancy of the Caucasus, extends both north and south of the Caucasus Mountains. Its chief town, Tiflis, has a large trade with Persia. (122. 4, 13.)

Finland. — Finland, a division of Russia in the northwest, is a plateau inhabited by Lapps and Finns, who are also found in parts of Norway and Sweden. Finland formerly belonged to Sweden, and about half the people speak the Swedish language. It raises many cattle, but its main exports are the products of its forests, such as timber, pitch, tar, rosin, and potash. Does this remind you of any part of the United States? What can you tell about the climate of Finland? (123.)

Port and Church of Helsingfors.

Siberia. — Siberia, the name of Russia's Asiatic province, awakens the idea of a desolate country covered with ice and snow, and in truth, a great part of Siberia is uninhabitable. Yet there are also immense forests, perhaps the largest in the world, many millions of acres of very fertile soil, and great mineral wealth. (123. 9, 11.)

From the Altai Mountains the same metals are obtained as from the Ural chain, and black lead, or graphite, is found in the mountains farther east.

All the land in Siberia belongs to the Russian government, and is leased out to village communities and to individuals.

Russia is engaged in the construction of a railway across her immense territory from east to west through Siberia. It will be longer than the distance from New York to San Fran-

cisco, and will connect Vladivostok on the Pacific with Moscow, which has connections with the Baltic, the Black, and the Caspian Seas.

The Viceroy of Turkestan.

By means of this road Russia hopes to come into close commercial relations with China and Japan, and at the same time to develop vast areas of Siberia. This region will produce wheat in abundance, and has mines of coal and iron, gold and silver.

The chief cities of Siberia lie along the present trade route. Along this line the tea of China is carried in a six months' journey to the great fairs of European Russia, partly by pony caravans, partly by water in summer, and more rapidly by sledges in winter.

The richest and most civilized town of Siberia is Tomsk.

Irkutsk has an extensive commerce with China.

Within the division of the Russian Empire called Russian Central Asia, which lies east of the Caspian Sea, is included a large part of the formerly independent districts of Turkestan. The great trading town of this region is Tashkend. (65. 9.)

The Ameer of Bokhara.

Although by far the greater part of Russian Turkestan consists of deserts and pasture lands, yet by a system of irrigating canals the Russians will eventually make it a productive region.

Two independent districts, Khiva and Bokhara, are under the protection of Russia. (136. 9; 72. 12.)

Historical Note. — The first regular government in Russia was established at Novgorod in the year 802. The ruler of Russia assumed the title of Czar about the time that Columbus discovered America. About this time the Turks determined to unite the Black and Caspian Seas by a canal between the Don and the Volga. To do this it was necessary to get possession of Astrakhan. Why? Astrakhan asked aid of Russia against the Turks, and it, with the surrounding country, was absorbed by Russia.

At this time also a Russian general invaded Asia and captured the city Sibir, near where Tobolsk now is. The country around Sibir was named Siberia and attached to Russia. In about fifty years the Russians extended their power across Asia to the Pacific. Peter the Great, Czar of Russia, was anxious to make Russia a naval power, but he had no seaport, for Sweden kept him away from the Baltic, and the Turks from the Black Sea. He conquered the east shores of the Baltic from Sweden, and founded St. Petersburg. The north shores of the Black Sea he conquered from Turkey. In 1812, Napoleon Bonaparte invaded Russia and defeated the Russians. He proposed to make his winter quarters in Moscow, but the Russians burned Moscow. Napoleon had thus no shelter for his troops in the midst of a Russian winter, and was obliged to leave Russia in a disastrous retreat.

True to the policy of Peter the Great, Russia is still seeking seaports. Her chief port on the Pacific, Vladivostok, is so far north that its harbor is closed by ice in the winter. Russia and England are rivals for the possession of territory and power in Asia.

REVIEW QUESTIONS.

Name and describe the five rivers of Europe most important for commerce. Why is the Rhine important commercially? Compare the Hudson River and the Rhine.

On what waters would a ship sail in going from the mouth of the Rhine to the mouth of the Rhone? In going from Marseille to St. Petersburg? In going via the Suez Canal from Bremen to Canton?

A tunnel under the Strait of Dover is proposed. What advantages or disadvantages would come to France and the neighboring countries from this tunnel? Describe the North Sea and its shores.

Describe a voyage down the Rhine, Rhone, Danube, Volga, Thames; make note of cities, people, occupations, products, scenery, objects of special interest.

Compare the fisheries of the Mediterranean and the Atlantic. Give some account of Norwegian fisheries.

What climatic influence have the Alps upon central Europe? Europe is much warmer than any other land in the same latitude. Why?

Find a city in Europe as far from London as Chicago is from New York. Name the capital cities of Europe.

In what country of Europe is commerce carried on considerably by caravans? What are the chief industrial regions of Europe?

To what cities in Europe would an importer send for raisins? Figs? Oranges? Grapes? Wines? Woolens? Carpets? Laces? Watches? Toys? Cutlery? Velvets? Silks? Olive oil? Cork? Sulphur?

Compare Los Angeles, California, with Florence, Italy. Compare London, Antwerp, and Hamburg as commercial cities.

Describe Moscow. Give some account of the mines of the Ural.

Compare the Scandinavian peninsula with Greenland. Give an account of the Norwegian shores and fiords. Describe a winter in northern Norway. Give some account of the Scandinavian forests. Compare Scotland and Norway.

There is a part of Europe called the "Bohemian Kettle." From this kettle the Danube escapes by the "iron gate." These are not named on the map. Can you locate them?

Spain is said to be almost Africa. Why?

Why are all the leading nations of Europe so much interested in the affairs of Turkey? What two European nations are rivals in Asia?

REFERENCES.

HALE: Seven Spanish Cities.

DU CHAILLU: Land of the Midnight Sun.

WALLACE: Russia.

MANNING: Italian Pictures.

GREEN: German Fatherland.

TAYLOR: Byways of Europe.

DAVIS: Rulers of the Mediterranean.

CHISHOLM: Handbook of Commercial Geography.

HARPER'S MAGAZINE, August, October, 1894.

CHAUTAUQUAN, May, June, August, October, December, 1893; January, February, March, May, October, November, 1894; May, 1895.

COSMOPOLITAN MAGAZINE, April, 1893; June, 1894; January, 1895.

SCRIBNER'S MAGAZINE, January, April, 1894.

ASIA.

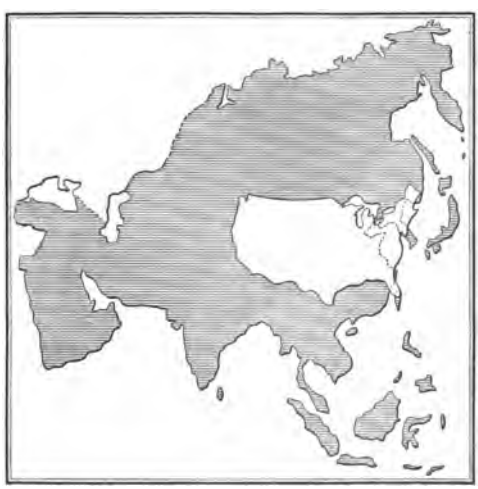
114. Extent, Relief, and Drainage.

(56; 57; 62; 134–144.)

Situation and Extent. — What oceans border Asia? What Grand Divisions are connected with it? Omitting Malacca, what are the parallels which bound it? What meridians bound it?

In what zones does it lie? What part of Asia is crossed by the Tropic of Cancer? By the Arctic Circle?

The area of Asia is 17,000,000 square miles, — one-third of all the land on the earth's surface. Its greatest distance north and south, along the one hundredth meridian, is 5300 miles, and the distance across the continent from Africa to East Cape, which juts out between the Pacific and Arctic Oceans, is 6700 miles. How does it compare in size with the United States? Name the seas, gulfs, and bay on the borders of Asia.



Asia and the United States.

Peninsulas and Islands. — As in Europe, so in Asia, the most remarkable peninsulas are on the south. What are they? Arabia, the most compact, may well be compared to Spain; India, with its island of Ceylon, to Italy with the island of Sicily; Indo-China, the most broken of the three peninsulas, to Greece. There are two other large Asiatic peninsulas, — Asia Minor on the west, and Kamchatka on the northeast.

Asia is bordered on the east by large groups of islands, on which is a series of volcanoes forming part of the "circle of fire" of the Pacific Ocean. Some of these islands are among the richest and most populous regions of the world. They are: Sakhalin, belonging to Russia; the islands of Japan; the Chinese island of Hainan; the Philippine Islands, and Malaysia.

Relief. — In Asia there is an enormous mass of mountains and of plateaus, which occupy all the center of the continent and continue toward the east and west by high plateaus and chains of mountains, — the highest in the world. Immense plains border these mountainous regions on the north, east, and south. The Plateau of Pamir has been given the name of the "Roof of the World" by the Hindus.

Eastward from the Pamir is the Central Highland, bounded by the Himalaya Mountains on the south and by the Tian Shan on the north.

Crossing this highland from west to east, and dividing it into two parts, are the Kuen Lun Mountains. The highland south of the Kuen Lun Mountains is Tibet. North of these mountains is Turkestan, which extends eastward into the Desert of Gobi, a region much less elevated than Tibet, but more desolate. It was formerly the bed of a sea as large as the Mediterranean, which has dried up and become an arid desert.

From the Pamir northeast to East Cape extend ranges of mountains bearing different names in different parts.

In the eastern part of the Central Highland commences

a system of parallel mountain chains separated from each other by great rivers. They spread over all the peninsula of Indo-China, and one of them extends to the southern extremity of Malacca.

Westward from the Pamir extend the Hindukush Mountains. Beyond these to the west lie the plateaus of Iran, Arabia, and Asia Minor.

North of the Central Highland lies Siberia.

Northwest of the Pamir is the great Caspian depression. During the last 400 years, the Caspian Sea has diminished in area about 4000 square miles by evaporation.

Rivers. — The rivers of Asia flow outward from the great highlands of the interior to the Arctic, Pacific, and Indian Oceans.

Rivers of the Arctic Ocean. — Three great rivers, the Obi, the Yenisei, and the Lena, the largest of Asia, flow into the Arctic Ocean. Along these rivers are situated the great cities of Siberia.

The Obi is the richest in fish of all the Siberian rivers. Its tributary, the Irtish, is flooded when the snows of the plains melt in May, and again in July, when the snows melt on the mountains in the south. At these times only tree tops rise above the broad waste of waters.

The chief tributary of the Yenisei has its source in Lake Baikal. The Yenisei already has a large traffic by steamer in summer and by sledge in winter, and if the navigation of the Kara Sea can be made practicable, this river may carry on a summer trade with Europe, bringing the furs, wheat, flax, and hemp of this region to the European market.

The Lena is a highway for trade in eastern Siberia.

Rivers of the Pacific Ocean. — Three of the rivers which enter the Pacific Ocean are very large. The Amur, the only river of northern Asia not flowing into the Arctic Ocean, is navigable for nearly 2500 miles.

The Whangho, or Yellow River, and the Yangtze, or Blue River, rise near each other in the mountains of eastern Tibet, and after widely divergent courses, approach each other again near their mouths. The Whangho is a turbulent river, little used for navigation, and it has often changed its lower course. The last change in 1887 buried whole villages in mud, and left its mouth 300 miles farther south than before.

The Yangtze is the great commercial highway of China, being navigable for large vessels 1200 miles from its mouth. Farther on it has many rapids, and passes through narrow clefts with precipitous walls of rock.

Rivers of the China Sea. — The Mekong, or Cambodia, the greatest river of Indo-China, flows into the China Sea. This river, however, is too much narrowed in places by sandbanks and rocks to become a great trade highway.

Rivers of the Bay of Bengal. — The Salwin and Irawadi are navigable rivers.

At the head of the Gulf of Bengal is the largest delta in the world, that of the Brahmaputra and the Ganges Rivers. The Ganges is 1500 miles long and is the chief means of communication and traffic in Hindustan. Spring tides rush up the river with great force, and near its mouth the tide sometimes rises to a height of twelve feet.

Rivers of the Arabian Sea. — The waters from the west of the Himalayas flow into the Indus and its several tributaries. This river follows the mountains for several hundred miles and escapes from them through a deep gorge. It has shifting channels and sandbanks, and as its course is through an arid country it is of less value as a highway of traffic than one would expect from its magnitude.

Rivers of the Persian Gulf. — The great highways of the ancient plain of Mesopotamia, the Euphrates and its twin river the Tigris, have played an important part in history. The Euphrates, "The Great River," has its source near Mount

Ararat, flows westward and southward. The Tigris, "The Arrowy," is a more rapid river and brings down great quantities of mud. It joins the Euphrates about 120 miles from the head of the Persian Gulf.

Interior Drainage System. — The Syr-Daria (or Jaxartes) and the Amu-Daria (or Oxus) are the largest of the interior rivers. They rise on the western sides of the Pamir and flow into the Aral Sea. Numerous rivers rise in the Hindukush, which are lost in salt lakes or in the desert.

Lakes. — The lakes of Asia are numerous. Most of them are without outlet and are either on high plateaus or on the steppes. Others, like Lake Baikal, are the reservoirs whence rivers draw their waters.

The Aral Sea, called the "Sea of Islands," is nearly as large as Lake Superior. Its waters are shallow and brackish, and although in the latitude of southern France, a foot of ice covers its surface in winter. Eventually the waters in this depression will become dried up.

Historical Note. — In the great basin of the Aral and Caspian Seas, once lived a dense population. From this region, in the fifth century, Attila raised his armies of Huns, which overran all southern Europe till Attila ruled from the Rhine in Europe to China in Asia. War and pestilence devastated the region, the irrigating canals were destroyed, and the barren land now found there bears no trace of the large cities and fertile gardens of which history tells us, except in the occasional ruins found half buried in the sand.

Like the history of the Aral-Caspian depression is that of the Balkash, northeast of it, and of the Tarim, on the other side of the Pamir.

115. Climate, Products, Commerce, and People.

Climate. — The Himalaya Mountains separate the warm south from the cold north.

Because Asia is so massive a continent and is so covered with plateaus, it has a climate especially continental, except in the

south and east. In truth, the ocean has little effect over a great extent of the land, and the heat and the cold are extreme in central Asia. The thermometer may reach 95 above zero in summer and 45 below in winter.

Siberia is noted for its cold, rigorous climate. The coldest place in the northern hemisphere is in latitude 67°, north of Yakutsk.

Is the rainfall of this region large or small?

South of Siberia in the plateau region the rainfall is slight, and, on account of the elevation, the climate is cold.

China has a climate much like that of the United States. Japan, of course, has a maritime climate. Is it moist or dry?

South of the Himalayas the climate is tropical and mild, with heavy rains in summer and autumn. This is the region of monsoons.

In northern India, near the base of the Himalaya Mountains, the rainfall is immense. The annual rainfall is forty feet, and three feet of rainfall in a single day are not infrequent. During the rains, the hot air, which rises from the Bay of Bengal and the plains of lower India, as it sweeps up the side of the mountain range rising like a wall on the north, has its temperature lowered very suddenly, and therefore much of its water falls within a belt a few miles in width.

The desert region of western Asia extends from the Sahara to the basin of the Indus. Is the climate of this region rigorous or mild? What other desert section is there in Asia?

Products. — Vegetation is unequally distributed over Asia. In the north the regions of Siberia where agriculture might prosper are not yet sufficiently colonized. Southwestern Siberia is very fertile, and capable of supporting many millions. High central Asia is little inhabited. The important products are raised in southern and eastern Asia.

The little map on the opposite page shows the chief product regions of Asia.

I. Northern plain: region of forests.
II. Central Asia: steppes and deserts.
III. Mediterranean region: fruits, cereals, cotton, indigo.
IV. Central and northern China: tea and mulberry trees.
V. Chief agricultural region: rice, cereals, cotton, opium.
VI. African region: dates, coffee.

Commerce. — The chief commercial regions, as well as the most fertile portions of Asia, are the two peninsulas of Hindustan and Indo-China, and the countries of China and Japan.

Hindustan is already crossed by railroads, which connect the valley of the Ganges with that of the Indus, and unite the principal commercial ports of the peninsula. China possesses a network of canals and of roads; the first railroad, constructed at great expense, was destroyed by the order of the emperor. The rivers of Indo-China are difficult to navigate, except the Red River of Tonkin, which allows France to carry its commerce to the very heart of China.

Product Regions of Asia.

The greater part of the commerce of Asia with Europe is carried on by water. Regular lines of steamboats transport the cotton, wheat, and rice of Hindustan; the rice, spices, and copper of Indo-China; the tea and silks of China and Japan.

Two telegraph lines connect Europe and Asia: one crosses the northern part of the continent through Siberia to Japan and China; the other is a submarine cable reaching Aden, English India, and by Singapore extending to the extremity of eastern Asia.

People. — While only about one-fifth of the area of Asia is thickly settled, this continent contains two-thirds of the population of the world.

Of the white race in Asia the most cultivated are the Hindus, the native people of India. Others of the white race are the peasants of Persia and many of the inhabitants of the Iranian highlands, of Armenia, and of the Caucasus.

Among the Europeans who have colonized Asia, the Russians are established there in the greatest numbers; after them the English and the French form the largest groups.

To the white race belongs also the great part of the inhabitants of Syria and Arabia and the Mesopotamian plain.

The people of the tropical southeastern peninsula and neighboring islands are Malays, of the brown race.

The greater part of the 800,000,000 inhabitants of Asia is composed of different branches of the yellow race. On the east are the Japanese, Chinese, Mongolians, and Tibetans; on the south, in the peninsula of Indo-China, are the Burmese and Annamites and the Siamese; on the west, the tribes of Turkestan, and the Turks or Ottomans in Asia Minor and Syria.

REVIEW QUESTIONS.

Make from memory a simple outline map of Asia. Draw across the map the equator in the proper position. Name the seas, gulfs, and bay on the south of Asia.

How large a part of the world's population is in Asia? How large a part of the land surface of the earth is in Asia? How large a part of Asia is thickly inhabited? In what respects does Asia surpass all other continents?

Compare Europe and Asia as to size; as to highlands; as to lowlands; as to the number of peninsulas. Compare the south shores of Europe and the south shores of Asia.

Indicate the river basins of Asia.

What countries of Asia have a climate like our southern states? What effect does the slope of Siberia have upon the temperature?

Which are the fertile parts of Asia?

What mountain ranges would be crossed in going in a direct line from Paris to Canton?

Name three straits and tell what waters they connect. Name three peninsulas on the south. One on the east. Name the islands on the east.

Describe the central highlands. Describe the great Siberian rivers. Describe the three rivers of the Pacific basin. Describe the Ganges, the Brahmaputra, the Indus, the Tigris, and Euphrates.

What mountains separate the cold part of Asia from the warm part?

Why is the rainfall of India great? Which are the most productive portions of Asia?

Which are the chief commercial regions of Asia? What are the main exports?

What races occupy Asia? In what part of Asia is each chiefly found?

116. Asiatic Turkey.

Position and Extent. — Of what does the Ottoman Empire consist?

What have you learned about Turkey in Europe?

Turkey in Asia occupies the western extremity of the continent. It has a very long coast line extending along the Black Sea and the Sea of Marmora, the Ægean and Mediterranean Seas, and the Red Sea, while the southeastern projection of the territory occupies a narrow strip of land along the Persian Gulf. It is separated from Persia on the east by long ranges of mountains, and from Arabia by the Syrian desert. (57.)

History. — In this region occurred many events in the dawn of history: here arose and fell the empires of Assyria and Babylonia; here was concentrated the commerce of the Mediterranean world in the hands of the Phœnicians; here occurred most of the events recorded in the Scriptures. Ruins alone testify to all these events of the past, and this land to-day, under the weak and corrupt government of the Turks, has fallen into decay.

Products and Manufactures. — Coal and iron, copper, lead, and silver, various marbles, and a fine quality of granite, are found.

Nearly every agricultural product, and almost all kinds of garden produce and orchard fruits are cultivated. There are mulberry trees and other valuable trees upon the hill slopes.

Angora, a town in Asia Minor, is famous for its goats, which furnish the mohair of commerce. Wool is an important product.

There are no important manufactures. The sponge fisheries of the Mediterranean are a source of wealth.

Provinces. — This Asiatic empire of the Turks is divided into many provinces, but a convenient division is that of (1) *Asia Minor*, a mountainous region in the northwest; (2) *The basin of the Tigris and Euphrates Rivers* on the east, mountainous in the north, and a region of plains on the south; and (3) *Syria*, and the narrow strip of land along the Red Sea, a region of hills and mountains.

Asia Minor. — There are evidences of volcanic action in every part of the peninsula of Asia Minor, and the southwestern portion is covered with volcanic cones. Many salt lakes exist, surrounded by salt marshes.

The rivers of Asia Minor are impetuous torrents during the rainy season, and sometimes wholly dry during the summer months. They carry along great quantities of alluvial soil, and form large deltas.

The west and south coasts of Asia Minor are irregular

in outline, and have high cliffs. The mountains in the north have forests of oak, cypress (tree of Cyprus), walnut, and plane trees. The interior plateau is a region of steppes, where herds of sheep and goats are raised. In the coast region are raised the products of the Mediterranean basin. What are they?

Smyrna is the center of the commerce of Asia Minor. The carpets of Smyrna are famous. Trebizond is an important, strongly fortified seaport.

The islands of the Ægean form a separate province of Asia Minor. One of the most fertile is Samos.

What have you learned about the island of Cyprus?

The Basin of the Tigris and Euphrates. — This is chiefly a pastoral country. The northern portion includes part of the region formerly known as Armenia. The chief city is Erzerum, which has a great trade with neighboring countries.

South of this region is Kurdistan. The Kurds are chiefly a nomadic race, skilled in the use of the javelin and sling, and famous horsemen.

The southern part of this region is called Mesopotamia. The chief cities are Bagdad and Mosul.

Not far from Bagdad are the ruins of Babylon, one of the most celebrated cities of the ancient world. Near Mosul are the ruins of the ancient city of Nineveh.

Syria. — Syria is a tract of land extending between the Mediterranean on the west, and the Euphrates and the Arabian Desert on the east. Damascus, the capital, and Smyrna are the largest cities of Asiatic Turkey.

Damascus is said to be the oldest city in the world. A dilapidated wall surrounds it, and the houses within are most of them wretched. It is situated in a fertile plain, and the Arabs call it one of their four earthly paradises. It is a center of trade, and has manufacturing industries.

Beirut is the seaport of Damascus, and between these towns is the only road in the country fit for carriages. Merchan-

dise is carried across the country by caravans of mules or camels. (134. 5, 6, 10.)

The southern part of Syria is known to us as **Palestine,** or the Holy Land. Its surface is mountainous, and many of the mountains are famous for the wonderful events that have happened upon them. The soil is barren, though if properly irrigated it would be fertile. The most important river is the Jordan, which flows nearly its entire length in a deep valley below sea-level. It flows into the Dead Sea, which is over 1300 feet below sea-level, the deepest lake basin on the earth. This lake has several tributaries, but no outlet. Its water is so salt that it can sustain no animal life, and is so buoyant that the human body will not sink in it. Of what other lake does it remind you? (134. 8, 14, 15; 69. 7, 16.)

Damascus Gate, Jerusalem.

Jerusalem has now a small population, most of whom are very poor; at Easter time it is thronged with Christian, Mohammedan, and Jewish pilgrims. Here was once the Jewish temple, and here Christ was crucified. (134.)

Region by the Red Sea. — Arabia by the Red Sea has two sacred cities, — Mecca and Medina.

Mecca has a small population, but during the three or four months of the pilgrimage of Mohammedans it is visited by 200,000 strangers.

This pilgrimage to his birthplace was enjoined by Mohammed on his followers, and is the only source of the wealth of Mecca.

Medina, "the Prophet's City," contains the tomb of Mohammed, to which hosts of pilgrims come.

Mocha, a seaport on the Red Sea, has large exports, chiefly the finest coffee. (57.)

117. Arabia.

Extent and Relief. — What are the limits of the peninsula of Arabia? (57.)

To what country does the belt of land along the Red Sea and a portion of land on the Persian Gulf belong? The rest of the plateau forms the independent land of Arabia, about as large as that part of the United States east of the Mississippi River.

About a third part of the peninsula is a desert of loose, reddish sand. A large part of this desert has never been crossed by travelers. (136. 2, 3, 4; 66. 2.)

The northern desert bears sometimes a small, wild plant called the samh, which yields food for the wandering Bedouin, and there are occasionally oases where he obtains fodder for his camels. A girdle of mountains, rising not far from the seashore, surrounds these deserts. On these mountains grow plants of the temperate zone, vines, and fruit trees. (136. 5, 6.)

Rivers. — There are no permanent rivers on the peninsula, but there are many valleys through which mountain torrents run during the season of rain, and in these valleys the towns and villages are located.

Products. — Several varieties of dates and aromatic plants like myrrh grow in the fertile regions. Camels, sheep, and oxen are reared, but the greatest pride of the Arabs is their celebrated Arabian horses.

The southeastern region, called Oman, is the most fertile part of Arabia, and is rich in lead and copper.

The pearl fisheries of the Persian Gulf employ many men,

and on the south coast the fishermen obtain great quantities of fish and tortoise shell.

Mascat. — The chief city of Arabia is Mascat, in Oman. It is one of the hottest cities on the earth. It has an excellent port, and is an important shipping place.

Aden. — Aden, a barren district in the southwest, belongs to the British, and has been strongly fortified by them. Why? The seaport of Aden, called the Gibraltar of the East, has greatly increased in importance since the opening of the Suez Canal.

View of Aden.

Historical Note. — As Arabia is a sterile tableland, its inhabitants have always been in great part nomadic, and there has been no settled government and but little history. It has been free because not worth conquering, and difficult to conquer from the inaccessibility of its interior.

Arabia is of historical importance from the fact that it is the place where Mohammedanism had its origin.

Here about 620 A.D. Mohammed proclaimed himself a prophet and, after many struggles, became the founder of the faith of Islam, often called Mohammedanism. This religion spread so that now it is the faith of the Arabians and Turks and of many in India and northern Africa.

118. The Plateau of Iran.

Extent and Soil. — The name of Iran is given to the plateau of Asia lying between the plains of the Tigris and Euphrates on the west, and the plain of the Indus on the east; the Caspian depression and the steppes of Turkestan on the north,

and the Persian Gulf and the Arabian Sea on the south. On the east it is connected with the plateau of central Asia by the Hindukush Mountains; on the west with Asia Minor by the Armenian ranges. (57.)

The plateau of Iran is in the zone of deserts that extends across the Old World, — over Africa, Arabia, Iran, central Asia, and Mongolia. More than a third of the whole plateau consists of sand and deserts in which oases are very rare. The valleys of the mountains are productive, as are also the provinces on the borders of the Caspian, where there is a luxuriant vegetation, including the forests of temperate zones and the products of the tropics.

Products. — It is estimated that hardly a fortieth part of the plateau is cultivated. Scarcely enough cereals are produced for local needs. Its fruits and its tobacco are important sources of revenue.

The land is well adapted to the raising of sheep and goats, and fully half of the population is engaged in this industry.

Means of Transportation. — The roads are everywhere in wretched condition and can be used only by caravans. Camels and dromedaries transport goods on the plains and plateaus, while mules are used on the mountains. The horses of Persia are less swift, but larger and handsomer than the Arabian horses.

Countries. — The plateau of Iran is divided among three independent states, — Persia, Afghanistan, and Baluchistan.

Persia. — The kingdom of Persia occupies the western part of the plateau of Iran. The only lowlands are narrow belts

of land bordering the mountain ranges and extending along its northern and southern boundaries. (135. 3.)

Most of the land is unproductive because of its dryness, but where it is irrigated by canals it proves fertile. There are over thirty salt lakes that have no outlet. The mountains have a rich vegetation except on the southern slope of the mountains in the south, where it is extremely hot.

The Shah of Persia.

The manufactures of Persia are numerous and famous, but limited in extent. Among them are various kinds of silk goods, hand-made carpets, shawls, and firearms.

The sovereign or shah of Persia is an absolute despot. About a fourth of the people are nomadic. (135. 2, 4, 6, 7, 9–14.)

Teheran is the capital and largest city. (63. 7.)

The second city is Tabriz. It is an important center of trade in the midst of orchards and vineyards.

Over the caravan route from here to Trebizond, through Erzerum, passes all the merchandise from the north of Persia to western Europe and England. The return traffic is also important. (135. 1, 5, 8.)

Oppressive taxation of the laboring classes, frequent famines, internal disorders, and the growing power of Russia and of Great Britain around it, have greatly weakened the power of the kingdom.

Most of the Persians are Mohammedans, but a few are Guebers, or fire-worshipers. Fire-worshipers are also found in Bombay in India, where they are called Parsees. (68. 6.)

This religion was introduced by the famous Zoroaster, who lived twenty-five centuries ago. [Read Moore's poem called "Fire-Worshipers."]

Intelligent Guebers say that they worship fire as a symbol of God, but the ignorant people worship it as a god itself. Each household has a fire that is never allowed to go out. The dead are not buried, but are left exposed upon the top of a structure called the Tower of Silence, where they are devoured by vultures. (67. 5.)

Afghanistan. — Afghanistan is a rugged, mountainous country occupying the northeastern part of the plateau of Iran. It is thinly peopled, and most of its inhabitants are nomadic.

The Afghans are divided into numerous tribes which are often at war with one another.

The capital is Kabul, situated in a lofty fertile region.

Baluchistan. — The southeastern portion of the plateau is occupied by Baluchistan, whose ruler, or khan, is a vassal of England.

Afghanistan and Baluchistan are of great importance politically because they lie between the two great modern powers of the continent, Great Britain in India and Russia in Turkestan.

119. India and Indo-China.

Extent and Climate. — In southeastern Asia are two peninsulas, India or Hindustan, and Indo-China, which have an area two-thirds that of the United States, with a population five times as great. Through how many degrees of latitude does each peninsula extend? What have you learned about the climate of this region? In what season of the year is the greatest rainfall? See page 28. (62.)

Relief of Hindustan. — Hindustan consists of the mountainous region of the Himalaya in the north; the Great Plain of northern India; and a triangular plateau called the Deccan, which forms the center of the peninsula on the south and is bordered by mountain ranges.

Extent of British India. — British India consists of Hindustan and of Burma, the western part of the peninsula of Indo-China.

Rivers of British India. — What have you learned about the rivers which enter the Bay of Bengal? During the rainy season the rivers of Burma overspread so much land that many thousands of the natives are forced to live in barges.

As almost all parts of India have a long, dry period following the rainy season, there are multitudes of canals and reservoirs for irrigating the land. Is India better adapted to farming or to stock raising? (78. 13.)

Relief and Rivers of Indo-China. — What do you know about the mountain ranges of Indo-China, or Farther India, as it is sometimes called? By what great rivers are the broad valleys among them watered?

In their middle courses these rivers are separated by high mountains, hence there are no great alluvial valleys like the plains of the Ganges and of the Yangtze, which give the riches of India and of China.

Coast of Indo-China. — The coast of Indo-China is much broken, and has many good harbors, while there are few on the nearly unbroken coasts of China.

Forests and Animals of Both Peninsulas. — A large part of each peninsula is covered by jungles and forests which contain very valuable timber, — as the teak, bamboo, and sandal-wood, as well as the chestnut, maple, walnut, and oak. Here is also the spreading banyan, or Indian fig tree, which sometimes covers several acres, and among whose branches are the homes of monkeys, birds, and huge bats. Besides these there are the shady mango, the palmyra, the palm, and the breadfruit trees. Tropical fruits are, of course, abundant.

What have you learned about the animals found in this region? It is said that in India wild beasts and poisonous serpents kill annually 20,000 people.

120. British India.

Agriculture. — British India is almost wholly an agricultural country. Rice and millet are the most abundant crops, but wheat is being raised in greater quantities every year. More cotton is produced than in any other country except our own. Opium is exported to China; other exports are indigo, tobacco, oil, seeds, flax, hemp, and jute. Pepper, tea, and coffee are grown. Silk is an important product of the Ganges valley. (73. 14.)

Manufactures. — Many centuries ago the textile manufactures of India, such as gold brocades, muslins, calico, shawls, silks, and carpets, were very famous. The manufacture of coarse cotton goods is increasing.

Minerals and Precious Stones. — There is a great variety of metals and minerals in India. Iron and salt and diamonds and other precious gems are known to exist in great quantities. In Burma are found the finest rubies in the world.

British Rule. — Under the British government the productiveness of India has been very rapidly increased by means of irrigation; several thousand miles of railroads have been built, and the internal trade has become very great.

Queen Victoria of England is the Empress of India, and a Secretary of State for India represents the British Indian

Empire in England. About half of the area of India, comprising twelve provinces, is under the immediate government of Great Britain, while there are many tributary states ruled by native princes. (139. 7, 9.)

Mail Carrier and Guard, India.

People. — The people who occupy this land present every variety of life, from the oldest and highest oriental civilization of the Hindus (the dwellers by the Indus River), to almost the lowest forms of barbarism of the black and naked savages who live in huts built upon scaffolds among jungle-covered hills. (137. 1; 138. 1, 3, 4, 7, 9, 10; 139. 1, 5.)

Among the Hindus there are four castes or classes of society, with many subdivisions, and these are carefully kept distinct.

(1) The priests, or Brahmins, who are treated with the greatest respect. (138. 4; 68. 5.)

(2) The military class.

(3) The mercantile class.

(4) The servile class, who can never improve or attain to a higher class. The lowest of all are the outcasts of India, called Pariahs, who are very wretched and degraded.

Cities. — The capital of British India is Calcutta. It is in the province of Bengal, the richest and most populous province of India. Calcutta is built on a branch of the Ganges delta, and by navigation or by railway is within easy communication with all the provinces, and hence has become a great center of trade. It is a modern city, having been built since 1700, and the European part contains handsome buildings. (137. 11; 77. 4.)

Nearly in the middle of northern India stands Delhi, one of its most celebrated cities. It is a very old city, and has such extensive ruins of its ancient grandeur that it is fittingly

called the "Rome of India." Its "Grand Mosque" is one of the most magnificent structures of the country.

On the west coast of India is Bombay Island. Its chief city, Bombay, is one of the largest and most important of southern Asia. Its harbor is the best in India. (137. 4.)

A House in India.

Madras extends for nine miles along the surf-beaten coast of the Bay of Bengal, and is a flourishing maritime city, although its harbor is not a safe one for ships. (137. 10; 78. 12.)

Agra is celebrated as having the finest specimens of architecture in India. Its greatest marvel is the Taj Mahal, a splendid mausoleum of pink sandstone and white marble, surrounded by a group of cypress trees. It was built by one of the emperors as a tomb for his favorite queen and himself. Many regard this as the most beautiful building in the world. (67. 10.)

Benares on the Ganges, the "most holy city" of the Hindus, has hundreds of sacred buildings. The Hindus regard

the Ganges as a sacred river, and make pilgrimages to bathe in its waters. (137. 2.)

Haidarabad, the fourth city in size, is noted for its manufactures of silks, cottons, silver, gold, and lacquer ware. (137. 9.)

Rangoon is a large trading port of Burma. (69. 5; 74. 12.)

The beautiful, fertile island of Ceylon, lying off the southeastern coast of India, belongs to the British government. It is nearly as large as Ireland. As in Ireland, a low maritime belt encircles a central tableland. (138. 3, 5, 6, 11; 69. 11.)

The productions of the island are varied. Its exports are tea, coffee, cocoanuts, and cinnamon. Several kinds of minerals are found here, and its precious gems, especially sapphires, are famous. Pearl fishing also is carried on.

Other Countries of India. — Besides British India there are two independent native states of Nepal and Bhutan, situated along the slope of the Himalayas, and a few small possessions of France and Portugal. (136. 8, 12.)

121. Indo-China.

Divisions. — Indo-China is divided into British Provinces, French Provinces, and Independent States.

British Provinces of Indo-China. — Besides Burma, the British possess the British Straits Settlements. The Straits Settlements consist of several provinces on the peninsula, and the islands between the Malay Peninsula and the island of Sumatra, in and near the Strait of Malacca. They are of importance because they are situated on the highway of trade between India and China. (138. 1, 2.)

The town of Singapore, on the south of the island of the same name, is a flourishing seaport which carries on a great trade. Its exports are sago, tapioca, pepper, coffee, camphor, and gutta-percha.

French Provinces of Indo-China. — The French possessions include the provinces of Tonquin, Annam, Cochin-China, and Cambodia. Much of the country is little known.

The King of Siam.

The Queen of Siam.

Siam. — The largest of the independent states of the peninsula is the central region of Siam, which includes also a part of the long Malay Peninsula. On the map of Asia this seems a small country, but its area is as great as that of Germany. (139. 3; 72. 6, 9.)

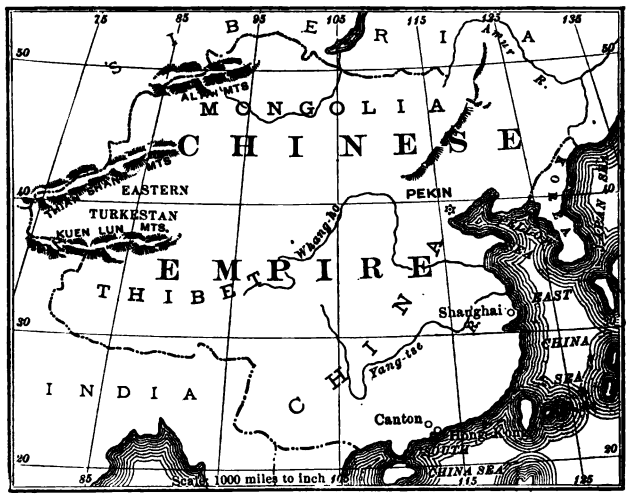
From June to November, the Menam River overflows its banks, hence it has received the name of the "Nile of Siam." On this overflow depends the success of the rice crop. (139. 4.)

The Siamese are very idle, and what little trade there is in the country is in the hands of the Chinese. (139. 6, 8.)

The capital of Siam and the center of its trade is Bangkok. This city is twenty miles from the mouth of the Menam. Its bamboo houses are built upon piles. (139. 2, 12, 13; 68. 3.)

122. Chinese Empire.

Position and Extent.—The Chinese Empire occupies the central and eastern portion of Asia, and is limited on the south, west, and part of the north by mountains. This area is



greater in extent than all Europe, and contains a population of 400,000,000, while Europe has only 300,000,000. What proportion of all the inhabitants of the earth are found in this empire? Only the British and Russian Empires are larger than China.

This empire is divided into the three great natural divisions of Mongolia, Tibet, and China Proper. (62.)

China. — China Proper extends westward from the Pacific Ocean for about a thousand miles, gradually rising in altitude till it reaches the high mountains of Tibet. It occupies about one-third of the Chinese Empire. On the north it is separated from the rest of the Chinese Empire by the Great Wall of China, built in the third century B.C. to keep out the people of Mongolia and Manchuria, who for a long time threatened and at length conquered China.

This wall crosses mountains and valleys, rivers and ravines, for a distance of 1200 miles. It is made of earth and faced with stone or brick. It is from twenty to twenty-five feet high and very broad, and has numerous towers and gates. It is now fallen in many places. (140. 1.)

Rivers. — What three nearly parallel rivers flow through China? What have you learned about their inundations? Which is of most commercial importance? What effect do these rivers have upon the fertility of China? (140. 4; 141. 4.)

A Chinese Village Girl.

Relief and Climate. — The Chinese Empire extends through twenty degrees of latitude, and its relief varies from the low lands along the seas to the mountainous region of Tibet.

The northern part comprises the highland of the north and the great Chinese plain of the Whangho, which supports the densest agricultural population in the world. The summers are excessively hot, and the winters excessively cold. This region produces grains and vegetables. (141. 12; 78. 1.)

The central region of terraces and plains is the most productive part of China.

The southern plateau is almost tropical in climate and products.

The rainy season lasts from April to October, and hurricanes from the South China Sea, called "typhoons," are frequent.

Products. — China produces three-fourths of all the tea consumed in the world. In central China the finest teas are grown, although the tea-plant is cultivated in almost every part of China. This is the best region also for silk culture, and China produces more silk than any other country. Enormous quantities of rice are produced in the lowlands of this region, and wheat, cotton, sugar-cane, bamboo, and timber are important products.

Corner of a Garden in China.

China has much undeveloped mineral wealth.

In the southwestern part of China are gold fields. The great coal mines are little worked, but copper, silver, lead, iron, tin, and cinnabar are abundant, and a variety of precious stones, rubies, sapphires, topazes, opals, and amethysts are found.

Because of the variety of its vegetable products and of its great mineral wealth, the people of China can be independent of the rest of the world.

Commerce. — The maritime trade is chiefly in tea and silk. The imports are manufactured goods from Europe and opium from India. A large overland trade is carried on with Russia.

Manufactures. — "Chinaware," or porcelain, was first made by the Chinese, and it was not until the beginning of the eighteenth century that Europeans discovered the secret of its manufacture. The Chinese invented paper-making from bamboo in the second century B.C. "Nankeen" calico was imported to Europe long before it could be made on that continent.

The Chinese are very skillful in working metals, and they have bronze vases that were made 1700 years before the Christian era. They still keep secret the composition of gong metal alloy, from which sweet sounding bells are made. Before the Europeans, the Chinese had invented the compass, guns and gunpowder, as well as printing and paper-making and porcelain manufacture. (141. 3, 13, 14; 74. 8.)

Civilization. — Until recently the Chinese have shut themselves up from the rest of the world. The people are very proud of the antiquity of their nation, very faithful to national traditions, and will brook no attack upon their laws and customs. They are very slow to make any change by adopting any part of a newer civilization. What did you learn in the Introductory Geography about the characteristics of the Chinese? (140. 6, 9; 141. 1, 8, 9, 10, 11.)

Language. — It is estimated that nearly one-third of the people of the earth speak the Chinese language.

The Hindu language with its various dialects is spoken by the next largest number. The English language ranks third, being used by one hundred and twelve millions. Fourth is the Russian language, fifth the German, sixth the Spanish, and seventh the French.

Education. — Education is eagerly sought by all, because without it no one can attain to official employment, rank, or

wealth. The Chinese have no desire to know more than their ancestors did, and they study the same studies in the same way, paying no attention to modern discoveries in science.

Religion. — The most widely spread religion is that of Confucius. His temples are found in every large town; in the spring and autumn sacrifices of animals, fruits, and wine are offered in his honor. There are many Buddhists and Mohammedans. The latter class hold aloof from the pagan Chinese, and in their many rebellions seriously threaten the imperial power. About a million of the natives are Catholics. (68. 14.)

Prince Chung of China.

Government. — The government of China is an absolute monarchy. The Emperor is the high priest of the empire as well as the absolute sovereign.

He belongs to the Manchus, or people of Manchuria, a large division of China. The Manchus invaded China two centuries ago, and placed their leader's son upon the throne, and their language has become the court and official language. (72. 1; 78. 11.)

Future. — Within a few years great changes will be wrought in China. Twenty-two ports are already open to foreign trade, the capital has telegraphic connection with far-away inland cities, short railways have been constructed, and plans for great railroads will eventually be carried out.

Because of the density and industry of the population, and of the vast natural resources of China, there is no country in the world where the introduction of modern means of production and transportation will have greater effects.

Cities. — There are about fifty cities in China that have each a population of over 100,000. (140. 3, 5, 8, 10.)

These cities are walled in, a mass of uniformly level, closely packed, red-tiled houses, with eaves overlapping each other and effectually keeping out light and air. The streets are only narrow alleys. The house-tops, where one must go for fresh air, are bright with pots of flowers. The monotony is broken only by the temples, pagodas, and official residences.

Peking, the capital, is built on the northern border of the great plain, and, unlike all other Chinese cities, except Nankin, it has wide, straight streets and open spaces.

A traveler of the thirteenth century described Peking, and most of his description is true of it at the present time. The old Chinese part is quite distinct from the newer Tartar or imperial town. (140. 11, 12; 69. 14; 73. 5.)

From Peking caravan trains start for Siberia. The seaport of Peking is Tientsin, twenty miles away. (140. 2.)

Canton is one of the largest cities. It has extensive manufactures, and a very great trade. (64. 4.)

Shanghai ranks among the first of the Chinese ports. (140. 13; 78. 9.)

Korea. — Until lately the peninsula of Korea nominally belonged to the Chinese Empire, and the people paid tribute. It is now an independent country under its own king. Its independence is due to the rivalry of Chinese, Japanese, and Russians, each country desiring to obtain control of the peninsula. (140. 7.)

Mongolia. — Most of Mongolia is desert land. Several chiefs rule the people and pay tribute to the Emperor of China, who, however, gives them presents of greater value than the tribute.

In the eastern part of Mongolia is the desert of Gobi. The western part of Mongolia is called Eastern Turkestan. (141. 2.)

Tibet. — Tibet is the highest plateau in the world, a cold, rocky, barren region shut off on all sides from the rest of the world by snow-clad mountains. (136. 1, 7, 10, 11.)

The lowest valleys in Tibet are at a greater elevation above the sea than the summit of Mount Blanc.

Eastern Turkestan and Tibet are little known. The people who live on the steppes and deserts are, for the most part, nomadic pastoral tribes, whose wealth is in their yaks, goats, and sheep. They have no towns nor villages, but dwell in "yurts," or tents, which they pitch wherever they find water and pasturage for their herds. (63. 2.)

A Valley in Tibet.

On these bleak central deserts one sees only coarse grass or bare gravel-strewn ground. Violent winds sweep over the country, carrying with them dense clouds of alkaline dust which parches and cracks the skin and blinds the eyes.

The Chinese claim Tibet, but they dare not, if they would, interfere with the power of its chief priest.

Islands. — The island of Hainan belongs to China. Formosa has recently been ceded to Japan.

The island of Hongkong belongs to Great Britain. Its capital, Victoria, has an extensive commerce and is the headquarters of the British navy in this part of the world.

123. Japan.

Position. — The Japanese Islands lie in three curved lines extending from Kamchatka to Formosa. The Kurile Islands are the farthest north, then the four chief islands of Japan — Yezo, Hondo, Shikoku, and Kiushu — form the central curve, and the Liu Kiu group and Formosa extend southward. All these islands together form the Empire of Japan. (62.)

Relief. — These islands are mountainous and volcanic, and earthquakes frequently occur. The mountain ranges extend the length of the islands, and are too near the sea to admit of long rivers, but the rapid streams are useful for irrigation. The coast lines are very irregular and have excellent harbors. (143. 9, 10; 144. 3.)

National Flower of Japan.

Climate and Products. — Hurricanes, storms, and fogs occur frequently in the surrounding seas; in winter the polar winds are so violent that navigation is dangerous along the western coasts. The warm trade winds bring abundant moisture, and the relatively moderate winters and moist summers give to Japan an extraordinarily rich and flourishing vegetation.

There is here a mixture of the growths of tropical and of temperate regions. Characteristic of Japan are the paper mulberry, the vegetable wax tree, camphor and lacquer trees.

The Japanese are excellent farmers. They cultivate large crops of rice, corn, wheat, barley, tobacco, tea, and cotton. (143. 6; 144. 4.)

Swine are raised and exported to China; silkworms and bees are raised everywhere, and abundance of fish are obtained from the seas.

Japan is rich in minerals. Gold and silver are found, and more important still are coal, iron, copper, and sulphur. Porcelain clay is found in abundance.

Industries. — The Japanese early attained a high development, and the industries of Japan are some of them very ancient. They include artistic bronzes, lacquered wares of all kinds, mechanical toys, carved ivory, porcelain wares, silk fabrics, arms, and all sorts of paper articles. These articles are exported, and also raw silk, tea, and sulphur. What is exported from Formosa? (143. 1, 2, 5, 7, 11; 78. 4, 15.)

The greater part of the exports is sent to the United States; the greater part of the imports comes from England.

Government. — Japan is a constitutional monarchy. The ruler is called the Mikado. His empire of the "Rising Sun" contains over 40,000,000 inhabitants.

The Mikado of Japan.

The Ainos. — More than four-fifths of the population of the island of Yezo are barbarians called *Ainos*, who live by hunting and fishing. They are called "the hairiest race in the world," contrasting strongly with the smooth-skinned Japanese. (144. 1.)

History. — Like the neighboring nation of China, Japan has a history that dates back more than two thousand years, and it has only been within the last half of the nineteenth century that the country has been freely opened to foreigners.

During these last few years, however, the Japanese have been eager to learn and to adopt the useful inventions and improvements of European and American nations. Great changes have therefore been made. There are good schools, roads, railroads, and telegraph lines. In 1872 the first railroad was built, a short line from Tokyo to Yokohama, and twenty years later there were nearly 2000 miles of railroad.

Cities. — Japan has thirty-five large cities. By far the greatest amount of trade is carried on at Yokohama, on the eastern coast of the island of Hondo. (143. 3; 144. 6.)

The capital of the Empire is also its largest city, Tokyo. Around the city are sacred groves, temples, and gardens, which occupy a large area. (144. 5; 68. 4; 74. 5, 9.)

Kyoto has a large population. (143. 4.)

Osaka has a large foreign trade, and is the fashionable resort

of Japan, having numerous theaters, tea houses, and gardens. Because of its canals and bridges it is called the "Venice of Japan." (144. 10, 11; 73. 6, 11.)

124. Malaysia.

Malaysia consists of the most extensive group of islands on the globe. It is called Malaysia, or the Malay Archipelago, because its native inhabitants are chiefly of the Malay race.

Other names frequently given the group are the Indian, Asiatic, or Eastern Archipelago, or the East India Islands. (79. 1, 3.)

These islands enclose the South China Sea, stretching in a wide curve from the Straits of Malacca to the Channel of Formosa. (61.)

A submarine plateau connects the nearest of these islands to the continent of Asia, and this, as well as the animals of the islands, shows that they once formed part of the continent. The animals of the islands farther east resemble those of Australia.

The elephant and tapir of Borneo and Sumatra, and the wild ox of Java, are found also in India, while on the islands near Australia are found marsupial or pouched animals, such as the kangaroo and opossum of Australia.

The islands of Malaysia are divided into several groups.

Philippine Islands. — The most northerly islands are known as the *Philippine Islands.* They are under Spanish authority. The largest island is about the size of Ohio. (146. 12, 13, 16.)

These islands have magnificent mountain scenery, with forests abounding in ebony, cedar, and other valuable woods. A great variety of fruit flourishes; and rice, sugar, tobacco, hemp, cocoa, and coffee are cultivated. Birds of brilliant plumage and many reptiles have their home here.

The capital is Manila, on the west coast of the largest island.

Sunda Islands. — The Sunda Islands lie south of the Philippine Islands. The largest Sunda Islands are Sumatra and Java. The smaller islands eastward from Java are grouped as the Lesser Sunda Islands. These islands belong to The Netherlands. (65. 5.)

Their position in the midst of very warm seas, the diversity of their relief, and especially the altitude of their mountains, which bring an abundance of rain, have produced a luxuriant vegetation. In many of the plains of Java, Sumatra, and Borneo there is not more than one degree of difference between the mean temperature of the hottest month and that of the coolest.

Java, a narrow island over 600 miles long, is the fourth island in size, but the most fertile in production: it is the most populous tropical island on the globe.

A Native Woman of Java.

A mountain chain in which there are forty-five volcanic cones, many being active, extends throughout its length.

Rice, corn, indigo, sugar-cane, tobacco, cloves, pepper, vanilla, coffee, and tea are its chief productions. Brazil is the only country that produces more coffee, Cuba is the only country that produces more sugar, than Java. (142. 10.)

The native Javanese are a quiet, industrious people. There are many Chinese, Hindus, and Arabs on the island. (142. 12, 13, 15; 72. 2.)

The capital of Java and of all the Dutch East Indies is Batavia, a great seaport and place for trade. (142. 6.)

Sumatra is over a thousand miles in length. Its chief exports are black pepper, rice, and camphor. It belongs to the Dutch, but much of the interior is still independent, because not yet explored.

Houses in Sumatra.

Borneo is the third island of the world in size. Its interior, like that of Sumatra, is little known. The greater part of the island belongs to the Dutch, but the British hold the northern part.

Celebes and the Spice Islands export many spices. (142. 2.)

REVIEW QUESTIONS.

In what part of Asia is Turkey? What are the mineral products of Turkey? The agricultural?

Describe the relief of Asia Minor. What countries of Europe most closely resemble Asia Minor in relief, climate, and products?

What can you say of Smyrna? What of Bagdad? What of Damascus? Where is Palestine? For what is it noted? Describe its relief. What do you know about the Jordan? The Dead Sea? Jerusalem?

How is the peninsula of Arabia bounded? Describe its surface. Why has it no large rivers?

What are the fisheries in the Persian Gulf? Where is the plateau of Iran? What nations occupy it? What part of it is productive? What are the domestic animals? Where is Persia? What are its manufactures? Name the chief cities on the caravan route from Persia and India to Europe.

Where is India? Where is Indo-China? How does Indo-China get its name? How do these two countries together compare with the United States in size? In population? How do we reach India?

What are the rivers of Hindustan? Why is India a land of canals?

Where is Burma? What valuable timbers are found in India? What are the agricultural products? What are the manufactures? What are the castes among the people? What is said of Calcutta? Bombay? Madras? Agra? Benares? Rangoon? Ceylon?

Where are the Straits Settlements? Where is Singapore? Why is this an important place? What can you tell about Siam?

Where is China? What are its natural limits? How does it compare in area and population with Europe? What are its three divisions? Describe the Great Wall. Name the three great rivers. Describe the relief of China. Describe the climate. What are the products of central China? What minerals are found? What are the leading manufactures? What is said about education? Religion? Government? Describe Peking. What is said of Korea? Mongolia? Tibet?

Where is Japan? What is the relief of the Japanese islands? What is true of the climate? What are the mineral products? The vegetable? The animal? What are the manufactures? What is the capital? What city has the most commerce?

Of what does Malaysia consist? What is said of the Philippine Islands? Where are the Sunda Islands? To what nation do they belong? What is said of their climate? Of their vegetation? What can you say of Java? What of Sumatra? Of Borneo?

Name and locate the Holy City of the Jews. Of the Mohammedans. Of the Persians. Of the Hindus.

Compare Salt Lake City and Damascus. Compare the islands of Yezo and Newfoundland. Compare Siberia and Canada.

REFERENCES.

GRINDROD: Siam, a Geographical Summary.

ROCKHILL: Central Asia, Mongolia and Tibet.

GUNDRY: China, Past and Present.

MAC MAHON: Far Cathay and Farther India.

CHAMBERLAIN: Things Japanese.

MOULE: New China and Old.

BENJAMIN: Persia and the Persians.

WALLACE: Malay Archipelago.

NINETEENTH CENTURY, September, 1895.

COSMOPOLITAN MAGAZINE, May, 1895.

HARPER'S MAGAZINE, June, Sept., Oct., Nov., 1894; June, July, Aug., Oct., 1895.

AFRICA.

125. Extent, Relief, and Drainage.

(58; 59; 148; 149; 150; 151; 152.)

Location. — Where is Africa? How is it connected with Asia? How separated from Europe? What are the parallels which bound it? What are the meridians which bound it? What part of Africa has the same latitude as a part of the United States?

In what zones does Africa lie? What temperature belts cross it? What part of it is desert?

What oceans border Africa? What two long seas? What large island on the east? What channel between this island and Africa?

Africa and the United States.

Size. — What continent is larger than Africa? Its area is about three times that of Europe, and four times that of the United States.

Its greatest length by a meridian is nearly one-fifth around the globe; its longest line by a parallel is not much less.

The tropical part of the continent is greater in extent than the combined areas of Europe, United States, Mexico, and Central America.

How much larger Africa is than the United States is shown by the figure on page 287.

Islands. — Madagascar is the fourth island of the world in size. Its area is about that of Texas. It is traversed by mountains with slopes and high valleys which have a temperate, as well as torrid, climate and productions. Politically it is a kingdom, under the influence and protection of France. The natives have some of the characteristics of the Malay race.

Mauritius (British) and Reunion (French) are about 600 miles east of Madagascar. Sugar-cane plantations are extensive upon both islands.

To the northwest of Africa lie three groups of small islands. They appear as mountain tops, and among them are several active volcanoes. The Azores (Portuguese) are most important. They export oranges and pineapples. The Madeira group (Portuguese) exports wine and fruit. The Canaries (Spanish) export great quantities of early vegetables for London and other markets. St. Thomas (Portuguese) has valuable plantations of the cinchona tree, coffee, cacao, and other products of the tropics. (114. 1, 2, 3, 4, 5, 7, 8, 11.)

Relief. — Africa is the most compact and unbroken of the grand divisions. The southern half consists of an immense plateau from 3000 to 5000 feet high, a sort of elevated fortress whose walls are formed by chains of mountains that leave but a small space between themselves and the sea. Nearly all the coast region is low at the seaside, but rises rapidly in terraces to the general height. In the Sahara the altitude falls to 1500 feet or less, and, in a few spots, to below the sea level.

The only real mountain range in Africa is the Atlas, in the north. These mountains are great moisture catchers, making the region which they cross fertile and valuable.

The greatest mountain mass of the continent is the Abyssinian. Some of the highest peaks are always snow-capped. These mountains receive and deposit the moisture from the

monsoons. This mountain mass descends rapidly in terraces, each of which is adapted to special products and industries.

In the lake region near the equator are the highest mountains of Africa, Kilimanjaro and Kenia, the former rising nearly 20,000 feet. Farther south the mountains rising from the plateau are much lower, but they gather moisture for the several great lakes. The Kamerun Mountains are an irregular mass, near the coast at the Bight of Biafra.

There are detached masses and low broken ranges elsewhere, but none of much importance. Such great ranges as the Andes and the Rockies of America, or the Himalayas, the Alps, the Pyrenees, of Eurasia, are nowhere found in Africa.

Deserts. — There are no such plains in Africa as the prairies of the United States, or the pampas of South America. The deserts occupy fully one-third of the area of Africa. (149. 4, 9.)

The Sahara is the general name given to the desert belt which stretches from the Nile valley to the Atlantic Ocean.

The Kalahari Desert is in southern Africa. (65. 4.)

Lakes and Rivers. — The principal rain belt of Africa lies within the tropics. There all the great lakes are found and all the great rivers have their sources. The lake system is second only to that of North America. Victoria Nyanza, the source of the Nile, is but little smaller than Lake Superior. Lakes Tanganyika and Bangweolo are the feeders for the Kongo River, which carries a greater volume of water than any other African river. Lake Chad, in north-central Sudan, is a marshy lake about the size of Lake Erie. Lake Assal is a small body of extremely salt water. This was once the head of the Gulf of Aden, but now it is 400 feet below sea level. It is valuable for its salt deposits. Of what lake does this remind you?

The Niger is a river 2600 miles long, and the best in Africa for navigation. It traverses a fertile country of much promise. The Orange River in the south is as long as the

Columbia River, but is scarcely navigable even for small boats. The navigation of all the rivers of Africa is interrupted by falls and rapids where they descend from the table-lands to the coast. (149. 2, 3, 6, 8.)

126. Climate, Products, People, and Countries.

Climate. — North of the Sahara, Africa is much like southern Europe in climate. The Sahara has a severe climate, — hot in the daytime, cold at night.

Equatorial Africa, except on the coast, has a sub-tropical climate on account of the elevation. The climate is mild and equable.

South Africa has a warm, temperate climate, generally dry.

Products. — The products of Africa at present exported are very limited, — both in kinds and quantity.

Numerous ore deposits have been discovered, but few are worked. Copper, iron, and lead are exported from Algeria. Coal is mined at several points in southeast Africa.

Copper ore and gold ore are important products of Cape Colony. Gold has been obtained from the Gold Coast for 300 years, but its working is hindered by the deadly climate.

The leading diamond district of the world has Kimberly, in southeast Africa, for its center. Egypt produces marble, limestone, and emeralds and rubies. Madagascar is rich in useful ores, and gold is found in Mauritius. (148. 2.)

The interior of Africa is subject to rains extraordinarily abundant which come to it from the surrounding oceans; hence the vegetation is of a varied character.

Most of equatorial Africa is an immense forest. Here are found palms, ferns, gigantic reeds, baobabs, and lianes, — climbing, woody plants which stretch from one tree to another in an inextricable network. (149. 11; 150. 5.)

The vegetable products are important in view of what they

may become under skilled cultivation. At present, the exports are mainly as follows: from Egypt, cotton, beans, and sugar; from Algeria and Tunis, alfalfa grass (for paper stock) and cork from the cork-oak forests; from the desert oases and the region south of the Atlas Mountains, dates in great quantities; from central Africa, palm oil, palm seeds, gum copal, india rubber, ebony; from eastern Africa, gums, including india rubber, myrrh, gum arabic, gum copal, and aloes; from Cape Colony, wine, grapes, and cereals.

The list of grains, fruits, seeds, and various food plants, which are raised for home consumption, covers the most important kinds grown in temperate and tropical climates.

People. — The people of Africa belong chiefly to the white and the black races. There are three distinct branches of the white race, the Berbers, the Arabs, and the European whites. The Berbers inhabit the Atlas Mountain region and the oases of the Sahara. They have permanent homes and build cities. The Arabs conquered the Berbers several hundred years ago, and now rule them. They occupy the Nile valley and most of the Mediterranean coast. Many of the Arabs are nomadic. They despise the dwellers in towns and often exact tribute from them.

The European whites resident in Africa are for the most part in South Africa; there are many French in Algeria and Tunis; a few Europeans are scattered in lands now coming under European control. They do not number a million.

Why are the southern parts of Africa and of South America those most favorable to European colonization?

The Ethiopian or Negro race occupies most of the territory south of the Sahara. The inhabitants of the Sudan region are stronger, more intelligent and industrious, than the tribes farther south. In the south interior are tribes of the lowest of human beings. Some are dwarfs and inhabit the dark forests; some dwell in caves and hollows, and subsist upon

roots and uncooked game. The gorilla seems but little lower in intelligence or habits than the lowest of these savages. (148. 1, 6, 7, 8, 9, 15; 149. 1; 150. 11, 12, 14, 15, 16.)

Travel. — The modes of travel through the most of Africa are generally very defective, in many parts dangerous for foreigners. Morocco has no roads other than beaten camel tracks. Algeria is well supplied with carriage roads and railroads. Egypt has the great Nile waterway, and more than 1200 miles of railroad. The European possessions in east and south Africa have many good carriage roads, and long lines of railroad, made and in progress. Some roads are projected into the Sudan and west Africa. Vast areas of the continent are crossed only by camel paths, and still narrower tracks for human porters, the latter often driven as slaves by Arab traders, with burdens of ivory and other products of the interior.

Religion. — Mohammedanism is the religion of the Arabs. They will fight for it desperately, and are very bitter toward Christians. The Abyssinians were converted to Christianity in the fourth century. The Negroes are mostly pagans.

Countries, Colonies, and Spheres of Influence. — Africa, south of the Mediterranean states, first became known to the nations of Europe about the time of the discovery of America. Until a few years ago, European nations utterly neglected Africa; now each of the "Great Powers" is striving for the largest share.

Some of the causes which operate against settlement and the advance of commerce are: The limited areas which are under strong government; the climate, deadly to Europeans, throughout the fertile hot regions; the lack of sufficient rain for cultivated crops over great areas; the practice of slave porterage and slave trade, still carried on by Arab traders; the very defective means of communication now existing, or even possible, in most sections, without enormous expense.

There are but few divisions of Africa which have well-defined

limits. Northern, southern, eastern, western, and central Africa have reference to indefinite regions indicated by their names. Sudan is not a country, but is the name given to an undefined region extending west from Abyssinia to near the Atlantic Ocean. Guinea is not a political division, but the name signifies an indefinite territory extending inland from the Gulf of Guinea.

The King of Abyssinia.

There are vast tracts of Africa which the countries of Europe have recently divided among themselves, covering their claims by such names as: Protectorates, Claims, Free States, and Spheres of Influence. (The political map shows their supposed limits.) Great Britain and Germany claim the most valuable regions. Other European countries claim areas of less extent. (59.)

The Sultan of Morocco.

127. Barbary States.

The Barbary States occupy the Atlas Mountain region bordering the Mediterranean Sea. They include the Empire of Morocco; the French protectorate, Algeria and Tunis; and the Turkish dependency, Tripoli. (59.)

Morocco. — The government of Morocco is an absolute monarchy, one of the most fanatical in the world. All Christian peo-

ple are held in disdain. Rich in natural resources, with an estimated population of 5,000,000, almost joined to Europe, it has nevertheless no railroads, no wheeled carts, no canals. Animals, chiefly camels, are the only carriers. The commerce is very limited.

A Jewess of Algiers.

The Sultan holds court at three cities, — Morocco, Fez, and Mequinez. The chief port is Tangier, near the entrance to the Strait of Gibraltar.

Algeria and Tunis. — Algeria and Tunis, under the French, are making much progress. There are many thousand miles of excellent carriage roads, besides other commercial facilities. Yet only five per cent of the inhabitants of Algeria are Europeans, and of Tunis even less. The city of Algiers has a fine situation on a bay of the Mediterranean. The walled city of Tunis is the largest city of the Barbary States. (150. 1, 2, 3, 4, 6, 7, 8, 9, 10, 13, 17; 69. 3.)

A Young Negress of Tunis.

Tripoli. — Tripoli is chiefly desert, occupying the area between Egypt and Tunis. Not more than one-tenth of the land can be cultivated. The population consists of Arabs, Berbers, and several thousands of slaves from the Sudan. The city of Tripoli is the center of the caravan trade across the desert.

128. Egypt.

Egypt is the most interesting division of Africa. Here arose the oldest civilization of which we know, and here long before the Christian era was a great nation. Its ruins, in the form of pyramids and temples, are the most wonderful and stupendous that exist. (59; 151. 3, 7; 152. 2, 5, 7, 9, 10.)

Egypt is traversed by the strangest river in the world. Though no rain falls in Egypt, yet for seventy days, from about June 26, the Nile is rising; for an equal time the valley is a lake; then come the seed time and the green fields of growing cotton, corn, wheat, beans, and other crops. In Lower Egypt, artificial irrigation from the Nile keeps crops growing the year round; in Upper Egypt, nothing grows for half the year. Until 1858 the source of the Nile was unknown. Its overflow comes from the rains brought by the northeast monsoons to the region drained by the upper Nile. (151. 2, 5, 6, 10, 12; 78. 14.)

Entrance to the Citadel, Cairo.

From its headwaters the Nile nearly follows a meridian line, from 12° south latitude to 32° north. It feeds, by the fertilizing soil which it brings from 3000 miles away, more than eight millions of people. It makes a garden in the midst of a vast desert, for only in its valley can the land of Egypt be cultivated.

Egypt is now nominally a Turkish province, with a government of its own, but its finances and its foreign relations are controlled by Great Britain. (152. 1, 3, 6.)

Cairo, the capital of Egypt, is the largest city in all Africa. Its narrow and crooked streets are thronged with people of all nations. It is connected by railway with the great seaport of Egypt, Alexandria. Another railway connects it with the ancient city of Suez where the canal enters the Gulf. At the Mediterranean entrance of the canal is the modern built town of Port Said. (151. 1, 4, 8, 9, 11, 13, 14; 152. 8, 11; 66. 4, 9.)

Suez Canal. — One of the most important ship highways of the world is formed by the Strait of Gibraltar and the Mediterranean Sea, on the north of Africa; the Suez Ship Canal, the Red Sea, the Strait of Bab el Mandeb, and the Gulf of Aden, on the northeast. (82. 1, 2, 3.)

The Khedive of Egypt.

The Suez Canal is 87 miles long, — 66 miles canal, and 21 miles lake. Its width and depth are sufficient to give passage to the largest vessels. About 4000 vessels pass through the canal yearly. Although most of the ships carry freight, more than 187,000 passengers pass through the canal in a year. The tonnage of the St. Mary's Canal, though greater in amount, is of less value.

Historical Note. — How far back in time there was a civilized people living in the valley of the Nile we cannot definitely tell, but we know that as early as the twenty-fifth century B.C. the Great Pyramids were built.

Egypt remained an independent country till conquered by the Persians in the sixth century B.C. Later it was made a part of the empire of Alexander the Great, who founded Alexandria, a city which grew rapidly and became for a time the center of the world's commerce. Egypt shared the fate of other Greek provinces in the first century B.C. and passed under Roman rule. After six centuries had elapsed the Arabs invaded Egypt. During the rise and fall, one after another, of the extensive kingdoms of the Babylonians, Assyrians, Egyptians, Per-

sians, Greeks, and Romans, most of the tribes of Arabia had maintained their independence. Explain how they had been enabled to do this because of the character of their country and their own mode of life.

After they became followers of Mohammed they started forth to extend their faith to other nations. By 800 how far did their rule extend?

The Arabs in Egypt were succeeded by the Turks, so that Egypt has continued under Mohammedan rule till the present time. Since 1883 it has practically been under British control although the Khedive — the ruler of Egypt — is a Turk.

129. Southern Africa.

Kongo Free State. — The Kongo Free State, in the northern part of southern Africa, is one of the most delightful in climate and fertile in soil of all the regions of the earth. By an arrangement made among the European powers, it is to remain an independent territory till 1900, when it will come into the control of Belgium. (59; 149. 5, 7; 64. 3; 66. 7.)

Cape Colony. — Of the British areas, Cape Colony is the most important, and its commerce ranks next to that of Egypt. The largest city of the Colony, Cape Town, resembles a European city. Several other divisions of south and southeast Africa are in different degrees under British control. (148.)

130. Western Africa.

Portugal, Germany, and France, as well as Great Britain, have control of extensive areas bordering the western coast, and most of the Sudan region is apportioned among European powers. (59.)

Important towns are Timbuktu, on the Niger, a great center for the traffic across the desert, and Monrovia, the capital of the Negro Republic of Liberia on the western coast of Africa. This republic was formed by the people in the United States as a home for freed slaves. (149. 3.)

REVIEW QUESTIONS.

Draw from memory a simple outline of Africa, and across this outline draw the equator in proper position. Draw also the first meridian.

What mountain range in the north? What highlands in the east? What is the general relief of the continent?

What two famous deserts in Africa? Where is the great rain belt?

Name five lakes and give an account of each. Name three great rivers.

Compare the Kongo with the Mississippi. How does the Nile differ from every other large river? Why is there very little rain in Egypt?

Which is warmer, northern or central Africa? What reason can you give for the extreme unhealthfulness of the western coast of Africa? What is the climate of south Africa?

What are the important minerals of Africa? Where is each found?

What are the vegetable products? What valuable vegetable products will probably be grown in Africa when the continent is well controlled by Europeans?

What two races of people in Africa? Where are the branches of the white race? What part is occupied mainly by the black race?

What is the religion of the Arabs in Africa? Of the Negroes?

Where are the Barbary States? What countries are included under this name? What is said of Morocco? Of Algeria and Tunis? Of Tripoli? For what two things is Egypt chiefly remarkable?

Where is the Kongo Free State? What is its soil and climate?

Where is Liberia? What is there to be noted about this country?

What are the means of travel in Africa?

Compare Africa with the other continents. What are the hindrances to its settlement by Europeans?

REFERENCES.

VINCENT: Actual Africa; or, The Coming Continent.

KELTIE: Applied Geography.

CHISHOLM: Handbook of Commercial Geography.

STANLEY: The Congo.

WHITE: The Development of Africa.

MCCOAN: Egypt as it is.

GRESWELL: Geography of Africa South of the Zambezi.

NATIONAL GEOGRAPHICAL JOURNAL, March, November, 1895.

THE NINETEENTH CENTURY, March, 1894.

THE CENTURY MAGAZINE, July, 1896.

AUSTRALIA.

131. Size, Relief, Drainage, Products, People.

(60; 61; 145.)

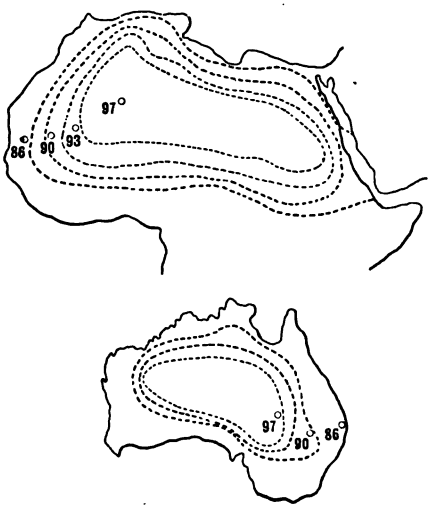
Australia and U. S.

Position and Size. — Australia lies southeast of Asia, between the Pacific and Indian Oceans. It is nearly equal in area to the United States, without Alaska. How many square miles does it contain?

Australia and Africa compared. — Look at the sketches of Australia and of northern Africa.

Compare them as to size, shape, and temperature belts.

What have you learned about northern Africa as regards its desert and the effect of its winds? These facts are true of Australia also.



Barrier Reef. — At an average distance of thirty miles from the northeastern coast extends for 1200 miles the Great Barrier Reef, the longest coral belt in the world. On one side huge breakers from the Pacific dash against this coral wall, while on the side towards Australia there is a

smooth, untroubled sea. It has a few openings through which ships can pass.

Relief. — The surface of Australia consists of great plains and plateaus. A mountainous belt skirts the eastern and southeastern coast. It is called the dividing range, for it separates the low coast valleys from the interior plain. In the southeast it attains its greatest height in a chain called the Australian Alps. The highest peak is Mount Kosciusko. Along the western coast there is a range of hills, and near the center of the southern border is another hill range. The center of the continent is little known.

Rivers. — The rivers of Australia are most of them short and of little use, because they vary so in volume, at times overflowing and at other seasons being reduced to a succession of shallow pools. For 1500 miles along the southern coast there is not even a small stream. The only large and important river is the Murray. This river equals the Dnieper in length, but it passes through so dry a plain after leaving the western slope of the mountain region in the east, that its volume is only equal to that of the Seine. One of its tributaries, the Darling, is also a large river.

Lakes. — Australia has many lakes, but most of them are salt; and, like the rivers, they vary greatly in size in different seasons. Lake Torrens, in South Australia, is the largest.

Climate. — The Tropic of Capricorn crosses the continent, so that the northern part lies within the torrid zone, and the southern within the south temperate region. The rain supply is very irregular. Christmas comes at what season in Australia? From what direction do the cold winds blow? Where does the sun seem to rise?

Plants and Animals. — The plant life of Australia is peculiar More than half of the species of plants there are exclusively Australian. The most common trees are evergreens, that give no shade, like the eucalyptus or gum trees, the acacia, that

has very small leaves, and other trees that have no leaves at all. Cedar trees, mahogany, and pines grow also. The trees do not generally grow in dense forests, but in scattered clumps. The eucalyptus trees average 300 feet in height. The steppes of the interior, when not bare and saline, are covered with almost impenetrable thickets of scrub. (145. 5, 6.)

What do you know about the animal life of Australia?

Sheep were first introduced by Europeans, and they have prospered till Australia is now one of the chief wool-producing regions of the world.

Minerals. — Gold, coal, iron, copper, tin, lead, and zinc are very abundant. It was the discovery of gold here that brought so many European colonists, and to them is due the present prosperity of the continent, for they not only worked the gold and coal mines, but turned to the raising of sheep, and this industry is the true wealth of the land. To-day Australia is much farther advanced than the ancient civilizations of China and India, countries far richer in natural resources than Australia.

People. — The natives of Australia are Oceanic negroes, the very lowest type of the human race. These natives, who have their abodes in holes in the ground and live on roots and fish, are rapidly decreasing in number. They will soon disappear like the Indians on our own continent before the incoming of European colonists. (145. 2, 3, 8.)

History. — Australia was discovered by the English, and for a century and a half they used it as a place to which they transported their convicts, just as the Russians sent theirs to Siberia. In the middle of this century this practice was abandoned, and free colonists, who had been coming for thirty years, rapidly increased in numbers. Now there are more than three million people in Australia, most of them English, Scotch, or Irish. Chinese were brought there to work the mines, and now they number 50,000.

The Australians, proud of the rapid growth of their colonies, hope that some day all the British possessions in the Pacific — **Australia, New Zealand, New Guinea and all the groups** of islands — will be united in one confederation of British Pacific Colonies.

132. Colonies.

Divisions. — Australia is divided into the five colonies of *New South Wales, Victoria, Queensland, South Australia,* and *Western Australia;* the island of *Tasmania* off the southeast coast forms a sixth colony. The governor of each colony is appointed by the English government, while the other executive officers are nominated by the people in certain of the colonies, and by the English government in others. (61; 145. 10.)

The two colonies of New South Wales and Victoria in the southeast are the most important, the most populous, and the richest in natural resources.

New South Wales. — New South Wales is the oldest colony of Australia and the most progressive. It has immense sheep-farms, or "runs," as they are called.

The cultivation of the vine is becoming one of the leading industries, and gardens and orchards produce abundance of fruit. The forests yield valuable woods. There are rich gold fields, coal mines, and diamond regions.

Sydney, its capital, is a large city. It is a fine English city, in no way different from the busy and prosperous cities of England. It is connected with the interior by several railroads, and carries on a commerce with all parts of the world. (145. 9.)

Victoria. — Victoria is the smallest colony of the continent, but it is relatively the most populous. Its natural resources and productions are like those of New South Wales. Its climate is the most enjoyable of Australia.

Melbourne, its capital, is the largest city in Australia. What two other cities south of the equator are larger? (158.) It

has broad, straight streets lined with fine buildings. Extensive manufactures are carried on. (145. 1, 7.)

Queensland. — Queensland occupies the northeastern corner of the continent. It has extensive gold fields, fertile agricultural land, and vast herds of cattle, sheep, and horses. Brisbane, its capital, has an extensive trade. (145. 12.)

South Australia. — South Australia has a misleading name. It should rather have been called Central Australia, for it includes all the central section of the continent. Much of this region is an unexplored desert, but there are pasture lands, and the plains are the chief wheat-growing region of Australia. It has also large copper mines.

Adelaide is its capital. Seven miles away is Port Adelaide, on the fine harbor of the Gulf of St. Vincent. (145. 4.)

Western Australia. — Western Australia is the largest of the Australian colonies and also the most thinly peopled. About one-third of its soil is a desert, and only the maritime districts are well known. Valuable metals are found here, and the pearl fishery is of importance. The forests have valuable woods, and sheep raising is carried on. Why is Western Australia less important than New South Wales?

Perth, on the Swan River, is the capital.

Tasmania. — Tasmania, an island but little smaller than Ireland, is situated a day's sail from Victoria. Its surface is mountainous, and part of it is a dense forest. It is the favorite summer resort of the people of Victoria. For what reasons? The temperature of Tasmania is about the same as that of what part of the United States?

The original inhabitants of Tasmania are now extinct and English colonists occupy the island.

The people of Tasmania are employed in agriculture, in rearing sheep and cattle, in mining, and in the South Pacific whale fisheries.

Hobart, in the southwest, is its capital. (145. 11.)

ISLANDS OF THE PACIFIC.

(61; 146; 147.)

133. New Zealand.

New Zealand, lying in the Pacific Ocean 1200 miles southeast from Australia, is another British possession. It consists of two large islands, — North Island and South Island, separated by Cook Strait, and of several small islands. The area of the group is almost equal to that of the British Isles. (61.)

King of the Maoris.

The coasts of New Zealand have many inlets and excellent harbors. A mountain chain extends throughout the length of the two islands, culminating on South Island in Mount Cook, which is higher than some noted peaks of the Alps. There are dense forests of lofty pines and other evergreen trees and tree ferns. There are good pasture lands and abundant minerals. (65. 12; 146. 2. 5.)

Both islands have many rivers and lakes. There are many volcanoes, and the hot lakes, boiling springs, and geysers far surpass those of Iceland in size.

The natives of New Zealand are Maoris, a race very strong, intelligent, and brave; they form only one-sixteenth of the present population. (146. 3, 4, 7, 9, 10.)

The capital of New Zealand is Wellington, on North Island. It has a fine harbor. Auckland, on North Island, and Dunedin, on South Island, are important cities. (146. 1, 6, 8.)

134. Melanesia.

The Pacific contains a vast number of islands. Name the islands which you have already studied in connection with the continents of Asia and Australia.

The other islands of the Pacific may be conveniently grouped into those of Melanesia, Micronesia, and Polynesia. (61.)

A Fiji Island Chief.

Melanesia includes the largest of the islands, New Guinea, Bismarck Archipelago, Solomon Islands, New Hebrides, New Caledonia, Loyalty Islands, the Fiji Islands, and others.

Several of these islands are of volcanic origin, and many are surrounded by coral reefs. All have a very warm climate and abundant moisture, and, therefore, a luxuriant vegetation.

The food plants are the cocoa-palm, breadfruit, tea, yam, sweet potato, and sugar-cane.

Mammals are scarce, but there is a great variety of birds of gorgeous plumage. On New Guinea and adjoining islands are found the beautiful birds of paradise.

Some of the natives are cannibals.

New Guinea, next to Greenland, is the largest island of the world. It is separated from Australia by a shallow strait, while the waters surrounding it elsewhere are twenty times as deep. From this you may infer that the vegetation and animals of this island are similar to those of Australia.

The island is traversed by a lofty mountain range, has dense forests, and a fertile soil. It is shared by three nations. The Netherlands claim the western part, Germany a part of the north coast, now called Kaiser Wilhelm's Land, and England holds the rest. (142. 1, 3, 4, 5, 9, 11, 14, 16; 64. 11.)

The Admiralty Islands (called also Bismarck Archipelago) and part of the Solomon Islands belong to the German nation, or are under their protection. New Caledonia and Loyalty Islands are French possessions, while the New Hebrides and the Fiji Islands belong to the English. (147. 9, 19.)

135. Micronesia.

Micronesia includes the small islands north of the equator between 130 and 180 degrees east longitude. Some of these are of volcanic origin, most of them are surrounded by barrier reefs of coral, while many of the islands are atolls.

King of Samoa.

The Marshall Islands belong to Germany, the Gilbert Islands to Great Britain, and the Caroline Islands and the Marianne or Ladrone Islands to Spain. (61.)

136. Polynesia.

Polynesia includes the remaining islands of the Pacific, eastward from those of Melanesia and Micronesia. Like those of Micronesia, some are lofty, volcanic islands, and others low coral islands.

The Society Islands, of which Tahiti is the largest, belong to France. (147. 18.)

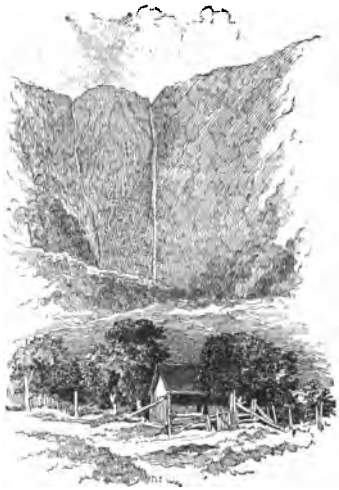
The Tonga or Friendly Islands, the Samoan Islands, and the Hawaiian Islands are independent. (147. 1, 3, 10, 11, 14, 17, 20.)

Hawaiian Islands. — The Hawaiian Islands are the most important islands in this group.

They are about 2000 miles southwest of San Francisco. What is their latitude? Their longitude? (147. 2, 4, 5, 6, 7, 8, 15.)

These islands are far away from any others, and are important as coaling stations for ships crossing the Pacific.

They rise from great depths and reach 14,000 feet above sea level. The two largest volcanic craters in the world are on the island of Hawaii, the chief island from which the group is named.



Waipo Falls, Hawaii.

The climate is pleasant and healthful. The soil is fertile.

The islands have a population of about 90,000. A little more than one-third are natives belonging to the brown race; nearly a third are Chinese and Japanese; and the remainder are white people chiefly from Portugal, England, and the United States. The white people are in power and have adopted a republican form of government in imitation of that of the United States.

The products of these islands can be readily named by considering their climate. Raw sugar is the chief export.

Honolulu, on the island of Oahu, is the capital. It is a city of about 20,000 inhabitants, has fine churches, and good schools. Its commerce is chiefly with England and the United States.

REVIEW QUESTIONS.

What grand divisions would be reached by sailing east from the southern point of Australia? By sailing west?

How large is Australia? What other part of the world is it most like? What is the Great Barrier Reef?

Describe the relief of Australia. Compare the river systems of Australia with those of South America. Describe the climate of Australia.

For what are the forests remarkable? What can you tell about the chief industry of Australia?

Why is Australia most thickly settled in the southeastern part?

What are the abundant minerals?

Describe the natives. What is the population of Australia? Describe New South Wales. Sydney. Victoria. Melbourne.

How does New Zealand compare in size with the British Isles? What is its relief?

What is included in Melanesia? How are these islands formed? What is their climate? What are their food plants?

What do you know about New Guinea?

What does Micronesia include? What are atolls?

What does Polynesia include?

Describe the Hawaiian Islands.

REFERENCES.

DANA: Corals and Coral Islands.

FROUDE: Oceania.

WOOD: History of Discovery and Exploration of Australia.

COGHLAN: The Seven Colonies of Australasia.

CONIGRAVE: South Australia.

ROTH: The Aborigines of Tasmania.

GRIFFIN: New Zealand.

BOWSER: Hawaiian Kingdom.

STEVENSON: A Footnote to History.

MARINER: Account of the Natives of the Tonga Islands.

HORT: The Garden of the Pacific.

ROMILLY: From my Verandah in New Guinea.

WHITNEY: Hawaiian Guide-book.

CHAUTAUQUAN, November, 1894.

REVIEW OF REVIEWS, May, 1894.

GENERAL AND COMPARATIVE.

137. Comparison of the Continents.

Position. — The six continents may be taken in three pairs ranged nearly north and south.

The two Americas make one pair; Europe and Africa make the second pair; and Asia and Australia the third pair.

In the first pair the two parts are nearly severed by the Caribbean Sea and the Gulf of Mexico; in the second pair the two parts are entirely severed by the Mediterranean Sea; in the third pair the two parts are not only severed but separated by the waters of the Indian Ocean, though still united by the chain of islands known as the East Indies.

Each pair has a broad, low plain at the north, and a narrow, high point at the south (Cape Horn, Cape of Good Hope, Island of Tasmania).

Peninsulas. — Each of the two great northern plains is flanked on either side by a peninsula. These are Alaska and Labrador in America; Scandinavia and Kamchatka in Eurasia.

Each of the three northern continents terminates southward in three peninsulas: North America in Florida, Central America (except for the narrow Isthmus of Panama), and Lower California. What are the southern peninsulas of Europe? Of Asia? The three southern continents have no peninsulas.

Questions upon Continental Relief and Climate. — Does the average elevation of the land increase or diminish from the equator to the poles? What would be the consequence were this reversed?

Compare the relief of North America and South America.

What would be the effect upon Europe if the Alps extended from Gibraltar to the Strait of Dover?

Compare the Alps and Himalayas. Compare the relief of Austria-Hungary and of Germany. What distinguishes the relief of Russia from the rest of Europe? Compare the relief of Spain and of Italy. Compare southern Europe with southern Asia.

Compare the relief of the Scandinavian peninsula and South America.

Do mountain ranges running east and west have greater or less influence on the character of people than those running north and south?

If Europe were located on the east of Asia what would its climate be? What would be the effect on the climate of Europe if the Alps ran east and west through Belgium?

What would be the effect on the climate of South America if the Andes passed along the Atlantic coast?

What would be the effect on the climate of North America if the Rocky Mountain system extended along the Atlantic coast?

What would be the effect if the "Height of Land" at the head of the Mississippi were as high as the White Mountains of New Hampshire?

What would be the effect on North America if the Mississippi were but 500 miles long and the Mackenzie were increased correspondingly in length?

138. Plains and Valleys.

The plains and valleys of the earth are the parts where most people live. There are a few mining regions among the mountains where in a little space is gathered a large number of people, but populous regions are generally plains or valleys.

Sea Bottoms. — Many plains were once the bottom of the ocean, and have become a part of the land surface of the earth by being uplifted. The great northern plains of North America and of Eurasia are examples. The central plains of North America and of South America, the Sahara in Africa, and the Caspian Basin in Eurasia are other examples.

Lake Bottoms. — Some plains are old lake beds. What can you recall of Lake Agassiz? Have you found the "iron gate" mentioned on page 250? Once the Carpathian Mountains

enclosed a great lake above this point, but the Danube cut a passage through the mountains and drained the lake. Its bed is now the fertile plain of Hungary. What example of such a plain is there in the western part of the United States? See page 148.

Since streams carry sediment into the upper end of lakes, and also cut away the channel at the lower end, the tendency of rivers is to destroy the lakes through which they run, and there are, therefore, many old lake bottoms within the valleys of some rivers.

Wind-filled Valleys. — When the climate of a region becomes drier than formerly the wind carries the fine soil to great distances and fills up depressions with the dust. In China are many plains formed of rich yellow dust, and these plains are wonderfully fertile.

Prairies. — In the United States the prairies were once sea bottom; but during the ice age some of them became the bottoms of freshwater lakes receiving the sediment borne southward by the movements of the great ice cap.

Coastal Plains. — Around continents and islands there are usually shallow spaces for some distance oceanward to a line at which the water becomes rapidly deeper. This rather shallow margin of the oceans is sometimes called the "continental shelf."

Down upon this continental shelf, the wind and waters bear the waste from the higher interior. This waste fills the shallow waters in places and extends the coast outward. The plain thus formed is called a coastal plain. What example of such a plain can you find in the United States?

Lava Plains. — The outflow of lava from volcanoes has sometimes been so great as to make large plains of lava. In the western part of the United States, in the valley of the Shoshone River of southern Idaho, is an example. Nearly one-third of India is an old lava field. Are lava plains fertile?

139. Lakes and Rivers.

Where is the lake region of North America? Of South America? Of Europe? Of Asia? Of Africa? Of Australia? Are these lakes in hot regions or cool regions? Between what parallels of latitude do most lakes lie? As lakes grow older they usually become smaller. Why? As rivers grow older they usually become longer. Why? As mountains grow older they usually become lower. Why?

If a lake is long and narrow, do you infer that it is deep or shallow? Are its shores steep and perhaps mountainous or is it a lake in a plain?

Which of the three great rivers of South America is of the most value commercially? What rivers of Asia are of greatest commercial importance? In which continents are the rivers of most commercial value?

Compare Asia and Europe as to their river systems.

What rivers of Asia would you suppose subject to disastrous inundations? What large rivers flow in nearly the same latitude in all parts of their course? What large rivers flow in nearly the same longitude in all parts of their course?

Which is the more valuable for commerce, the Amazon or the Mississippi? Consider latitude, basin, people.

Interior Drainage. — Name the chief inland seas and lakes in the world and tell what rivers empty into each.

The area drained into seas and lakes without connection with the ocean is in every continent of very considerable extent. In the United States the Great Basin has an area twice that of Colorado. More than half of Australia has its drainage to interior lakes. In Africa nearly the third part is so drained, and in Eurasia more than one-fourth of the vast domain pours its waters into seas and lakes from which they escape only by evaporation.

The land drained to interior lakes and seas is greater in area than the drainage basin of the Pacific Ocean.

REFERENCES.

RUSSELL. Lakes of North America.
GILBERT. Lake Bonneville.

140. Coasts and Shores.

Each ocean has its own characteristic shores. The North Atlantic Ocean is the one with connecting seas and gulfs extending far inland. Name the seas, gulfs, and bays on the west of the north Atlantic Ocean. On the east. These make the north Atlantic the highway of commerce. What five seas on the western shores of the north Pacific? What arms of the ocean north of the Indian Ocean? Are there any important seas, gulfs, or bays south of the equator?

The Pacific coast of North America has two good harbors, — San Francisco Bay and Puget Sound. From Oregon to Alaska the coast has a line of deep inlets separating long, narrow islands from the mountainous mainland. These islands are the continuation northward of the Coast Range which the Cascade Range has crowded into the ocean. Puget Sound and the inlets north of it occupy what seems to be the northern end of the trough, which farther south is the valley of Willamette and the central valley of California.

On the eastern coast of North America, Massachusetts Bay marks the junction of two kinds of shores. South of Massachusetts Bay, along the Atlantic and Gulf coasts to South America, the land has so recently risen above sea-level, that it retains in large degree the smoothness of the sea bottom. Parts of this coast have sunk again, though not so low as before, and parts seem to be sinking still.

North of Massachusetts Bay the coast is older and more worn by river action. In Maine the coast has sunk and allowed the ocean to run up into the valleys which the rivers had worn. The islands, bays, and tongues of land were made by the submergence of the original hilly shores.

Fiords. — In Scandinavia the people call the deep, narrow inlets fiords, and it is becoming the custom to give them the same name in this country. In what part of North America

are fiords found? Which state of our country shows the best examples? In what parts of Europe are there many fiords?

Where there was a wide plain near the sea, and the valleys in this plain were very broad and shallow, there the sinking of the land and the incoming of the sea made a different kind of bay, such as we find along the Atlantic coast in Delaware, Chesapeake, and Mobile Bays, and Pamlico and Albemarle Sounds. The harbors at the mouths of rivers along the Atlantic coast have been formed in the same way.

141. Islands.

The islands of the world may readily be divided into two classes: (*a*) those near the continents or connecting the continents, and (*b*) those far from the continents in the oceans. The first class may be called continental, the second oceanic. In structure, climate, vegetation, and animal life, continental islands are like the continents near which they lie. They appear to be mountain tops or plateaus that have been raised along the side of the continents or between them by the same forces that have raised the continents themselves; or they appear to be the tops of lands whose bases have been submerged by the sinking of the land. If North America should sink a few hundred feet, the Appalachian Mountain system would become a long island; if the submergence were greater, it would become a series of islands such as we now find on the east coast of Asia, between North and South America, between Asia and Australia, and between Asia and North America.

The Grecian Archipelago is another example of islands that appear to be mountain tops whose bases are submerged.

Oceanic islands appear to have been thrown up from the bottom of the ocean by volcanic action, or to have been built up by corals.

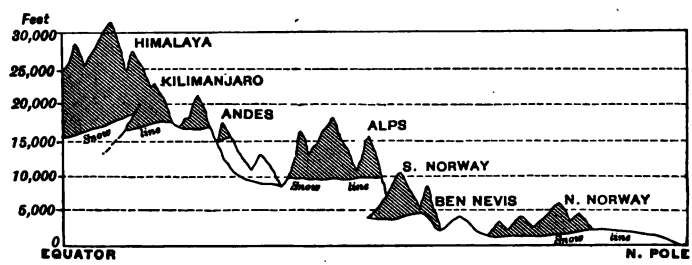
142. Climate.

Temperature. — The temperature of a place is influenced by several conditions: 1. Its elevation. 2. Its distance from the sea. 3. Its slope. 4. Its location with reference to other land. 5. The prevailing winds. 6. The moisture of its atmosphere. 7. Its vegetation. 8. Chiefly, its latitude.

What is the average temperature in the hot belt? In the subtropical belt? In the warm temperate? In the cool temperate? In the Arctic? Where are each of these belts?

143. Effect of Elevation.

What is the average temperature at the base of a mountain near the equator? How high must you ascend the mountain before the temperature becomes that of 20° north latitude? 30°? 40°? 50°? 60°? Would the elevation whose temperature corresponds to that of 60° north latitude be found on many mountains in the torrid zone?



Heights of Mountain Peaks and Snow Line.

Insert in the figure above, Pike's Peak and Mount Washington. How high are the Alps? The mountains of Scandinavia? What illustration can you give of the effect of elevation on vegetation?

Make a drawing of a mountain in the torrid zone, and indicate the temperature at different points along its sides. Do the same with a mountain at 20° north latitude; 30°; 40°; 50°; 60°. Find mountains to which your drawings will nearly apply.

Water freezes or ice melts at 32°. If the temperature of a mountain top in July and August were above 32°, would the snow and ice melt? If the temperature were less than 32° in the hot months, would the snow remain during the year? Estimate approximately the height of a mountain in the torrid zone which is snow capped in summer.

(80° — 32° = 48°. 300 ft. × 48 = 14,400 ft.)

144. Effect of Moisture.

If there is an abundance of watery vapor in the air, this holds the heat that is escaping from the earth during the night, and prevents the excessive cold. If there is little vapor in the air, the heat of the earth escapes freely into space, and the temperature falls very low. This is the reason why cloudy nights are warmer than clear nights. Are the nights cold in desert regions?

Watery vapor, whether invisible or in the form of fogs and clouds, shields the land during the day from the intense heat of the sun, and during the night prevents the escape of heat from the earth, and so maintains more nearly uniform the temperature of the day and of the night.

In continental climates the range of temperature is great, and the rainfall small; in maritime climates the range of temperature is small, and the rainfall great.

QUESTIONS.

It is a general rule that the temperature decreases from the equator toward the poles. Why is this?

As the elevation of a place is greater, the temperature is less. Why is this?

As a general rule the interior of a continent is hotter in the summer and colder in the winter than the coasts. Why is this?

In latitude 30° to 60° which side of a continent is the warmer, the east side or the west side?

Is the east side or the west side of a continent between 30° north and 30° south the warmer? (See map of Isotherms.)

Which is colder, Norway or Sweden? Why? How much? Which is colder, the British Isles or Labrador? Why? How much? Which is colder, the British Isles or Kamchatka? Why? How much? Which is colder, San Francisco or New York? Why? How much? Which is colder, France or China in the same latitude? Why? How much?

Did you find the difference in temperature between San Francisco and New York greater or less than that between France and northern China? Why is this?

Maritime climates are equable ones. Why? The most equable climate in the world is that of the Friendly Islands, where the difference between the hottest and the coldest months of the year is only 2°.

At Yrkutsk in Siberia the winter temperature is –40° and the summer 62°, the range of temperature being 102°. Sometimes at Yrkutsk the winter temperature goes down to –58° and the summer rises to 99°. Is it as hot as that at the equator?

Name several things that affect the temperature of a place.

Is the climate of northern Asia warmer or colder than its latitude would indicate? Why? How is it with central Asia? Southern? Western Europe? Western North America? Chile? Labrador? Mexico? Cape of Good Hope? Cape Horn?

145. Winds.

If the earth were at rest and received no heat from the sun, it would be surrounded by the air to an equal height in all directions, and the air would be perfectly still. There would be no wind.

Effect of the Sun's Heat. — The equatorial regions of the earth are most warmed by the sun, and the air surrounding these regions is most expanded by the heat.

Let us for the present think only of the expansion of the air by the sun's heat, and consider what effect it would have. This expansion would raise the air over the equatorial regions into a belt thicker (higher) than the air in other parts of the earth, and the air of the upper portion of this belt would roll

off toward the poles. This would increase the amount of air over the polar regions, and hence make the pressure there greater. The greater pressure of the air over the poles would crowd the heavy polar air towards the equator along the earth's surface. This would result in a movement in the upper region of the air from the equator towards the poles, and in the lower region next the earth's surface from the poles toward the equator.

The warm air rising from the torrid zone soon becomes cooled in the cold upper regions into which it passes. It becomes at length colder and heavier than the surface air below it. Because it is heavier than the air below it, it descends to the surface instead of going on to the pole. A considerable part of it takes its place in the surface current moving toward the equator, while the remainder flows toward the pole on the earth's surface. By observation it is found that this descent takes place at about 30° on each side of the equator, varying with the season of the year.

Between 30° and 60°, we find a surface current sometimes north and sometimes south, according as the north-moving or the south-moving current is the stronger. This is therefore the region of variable winds.

In these regions the prevailing winds are westerly. Most of the United States is in the region of the variable winds.

When the air moves along the surface of the earth, we notice the wind it makes, but we do not notice its movement when it rises or falls.

Near the equator, the cooler and heavier air is coming in currents from the north and the south along the surface of the earth. These currents we feel and call them winds, but the ascending of the warm air we do not notice, and we call it a calm.

Where the air descends at about 30° from the equator, there is little surface movement, and there, also, there are calms.

So there are three calm belts around the earth, — the Equatorial Calms, the Calms of Cancer, and the Calms of Capricorn.

Observation shows that these calm belts are no one of them fixed in position, but are a few degrees farther north in our summer than in our winter.

Effect of the Earth's Rotation. — Let us now consider how the rotation of the earth affects these air currents.

The earth turns on its axis once in twenty-four hours, and as the circumference of the earth is about 25,000 miles, it must move at the equator at the rate of more than 1000 miles an hour from west to east.

At the poles its motion eastward is nothing, and near them it is slight. The air is a part of the earth, and moves with it. Every particle of air will, unless something prevents, move from west to east at the same rate as the ground beneath it moves. The wind coming along the earth's surface, from the north and the south toward the equator, will have also a small movement toward the east, but, as it approaches the equator, it will pass over lands and seas having a much more rapid motion eastward than itself. These lands and seas will be carried by their more rapid eastward movement on through the air currents moving toward the equator. This makes the air appear to be coming from the east, and we have north of the equator a northeast wind, and south of the equator a southeast wind.

These regular winds are called trade winds because they are so serviceable to those carrying on trade by sea.

REVIEW QUESTIONS.

What movements in the air does a bonfire cause? Would we have wind if we had no sun? What part of the earth is most heated by the sun? Why does this cause wind?

Why does not the air moving in the upper current north from the

equator continue to the north pole? What does it do instead? Where are the three calm belts?

What effect does the rotation of the earth have on the winds blowing toward the equator?

What are the trade winds? Where are the trade winds found? What part of the earth's surface is covered by them? What gives them their movement toward the equator? What gives them their westward movement?

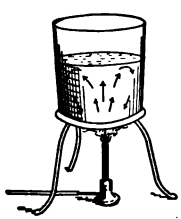
Why is there an equatorial calm belt? How wide is it? Does it remain constantly on the line of the equator? Where is it located at different seasons of the year? Is this calm belt a region of great or little rainfall? Why?

Are the calms of Cancer and of Capricorn just on these circles? Where are they? What causes them?

Trace the trade winds from the calms of Cancer and of Capricorn to the calms of the equator. Where is the region of variable winds? Where are the monsoons? Explain their origin. In what direction do they blow? Compare the trade winds and the monsoons.

146. Ocean Currents. (26.)

The water of the frigid zones is very cold, while that of the equatorial regions is made warm by the sun. This in itself creates a circulation of the waters. The accompanying figures will illustrate the conditions and show the circulation that will result.



Heat causing Upward and Downward Currents.

Ice causing Downward and Upward Currents.

The colder and heavier waters of the polar regions constantly tend to sink below and move under the warmer and lighter waters of the torrid zone. These waters so raised will, of course, roll off to the north and to the south of this central ridge. The currents of the air

are also forces still more effective than change of temperature to move the surface waters of the ocean.

There is for about 30° each side of the equator a general westward movement of the air caused by the trade winds having a westerly movement. This air movement over the broad ocean produces a corresponding water movement toward the west. When those currents reach the continents they divide, a part moving to the north and a part to the south along the shores.

When the equatorial current turns to the north or to the south, it has the earth's movement eastward of about 1000

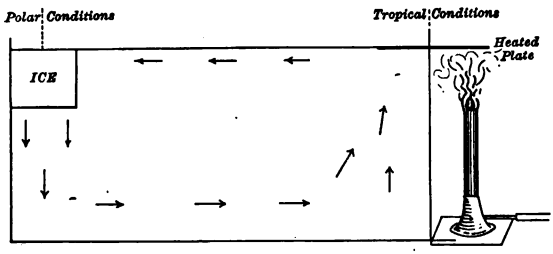


Illustration of Ocean Circulation.

miles an hour. When it has gone some distance north or south of the equator it reaches a part of the earth moving less rapidly eastward than itself, and hence it goes eastward faster than the ocean bed over which it is moving; that is, it bends eastward and becomes a northeast current on one side of the equator, and a southeast current on the other side of it. Soon after curving eastward it reaches the region of westerly winds, and these winds assist the movement of the current.

Pacific Currents. — The equatorial current of the Pacific divides into two principal branches, of which one strikes upon the coasts of China, turns northward to Japan, and thence eastward to North America, a part, however, branching southward. The other branch of the Pacific current bathes the

eastern shore of Australia. What effect upon the climate do these warm currents have?

Gulf Stream. — The trade winds on the Atlantic drive the heated surface water lying between South America and Africa westward to the shores of South America. The eastern projection of South America turns a portion of this westward current northward into the Gulf of Mexico. Here it fills the Gulf fuller and is still further warmed. The Gulf of Mexico is the world's great tea-kettle with warm water ever ready, and the Straits of Florida furnish the spout by which the water that is all the time poured in may escape. This escaping current is the Gulf Stream, and it has at the Straits of Florida a rate of motion of four miles per hour. This water is distinctly warmer than the other waters of the Atlantic, is of a different color, and runs northeast along the southeastern coasts of the United States. This stream is very broad and deep, and carries many times more water than all the rivers of the earth. It is a little higher than the ordinary level of the ocean, and its edges are easily found. It carries more heat into the north frigid zone than all that comes there directly from the sun.

It sends off a branch to the west coasts of France and England, that makes Ireland a green isle in the latitude of frozen Labrador, but its greater portion passes by Great Britain and Ireland to seek the polar regions.

Cold Currents. — At the same time that the Atlantic, Pacific, and Indian Oceans carry westward hot currents, there are cold currents entering these oceans from the north and the south to complete the circulation.

In the Pacific Ocean the current of Humboldt, coming from the south, passes up the west coast of South America past Chile and Peru, and makes its influence felt almost to the equator. It is at length taken into the westward equatorial current.

In the Indian Ocean a cold current enters from the south

along the west coast of Australia, and moves northward until drawn into the westward movement of the waters, and at last makes its exit with the Mozambique current.

The South Atlantic receives a cold current along the west coast of southern Africa, which moves northward until it strikes the western drift.

From Greenland southward along the eastern coast of North America a cold current sets south, laden with icebergs. These icebergs, like a great fleet of white-winged ships, move southward, until off Newfoundland they meet the warmer current moving northward, and are conquered by it. These icebergs cool the east wind of the New England States.

A stream of cold water also issues from Baffin Bay and Hudson Strait, and passes the Labrador coast, Newfoundland, Nova Scotia, Maine, and Massachusetts as far as Cape Cod. Here it is diverted seaward, and it sinks under the Gulf Stream and disappears.

Direction of Currents. — Remember that ocean currents and air currents (winds, storms, cyclones) turn to the right north of the equator, and to the left south of it.

The general circulation of the air is the same as that of the waters, except that the winds move in wider sweeps than do the ocean currents, for they cover land as well as sea.

Sargasso Seas. — As there are regions of very little wind, so there are parts of the ocean where there is very little current. There are great stretches of sea around which the currents of the ocean move. These places are called Sargasso Seas. Sargasso is a Portuguese word, meaning seaweed.

There are five sargasso seas. Where are they?

Name the currents that move about each of these seas.

What do you notice about their latitude? These seas are centers round which the winds as well as the ocean currents circulate. Describe the circuit of the winds about each of these seas.

REVIEW QUESTIONS.

Explain how the differences of temperature in the oceans create a circulation of the ocean waters.

What effect on the currents of the oceans do the trade winds have?

Describe the Gulf Stream. What causes this stream? What influence has it on the climate of Europe?

Describe the great equatorial current of the Pacific Ocean. In what part of the ocean do the warm currents move westward? Eastward?

Where is the cold current along the coast of North America? South America? See the effect of the currents on the hot belt of the earth shown on page 24. Is the amount of water carried by the cold currents greater or less than that carried by the warm currents? In answering this question consider the effect of the air currents.

Notice that all the cold currents from the south move along west coasts northward while cold currents from the north move along east coasts southward. How do you account for this?

What current assists a ship sailing from the shores of Brazil to Cuba? What current assists a ship sailing from the shores of China to San Francisco?

147. Rainfall. (26.)

The warmer the air is, the more moisture it can hold. When air is cooled, it can hold less moisture than before, and if it is cooled enough, some of the moisture falls in dew or rain.

The amount of moisture which the air can hold increases much faster than the temperature rises. When the thermometer rises about 18°, the capacity of the air for moisture is doubled; that is, it can hold twice as much moisture as before. If air at 78° were saturated with moisture, what would happen if the temperature of the air should be brought down to 60°?

When moist air ascends, it cools, and the vapor it contains is condensed first into fog or mist. The fog drops are of different sizes and are carried upward by the ascending current of air. The smaller drops are carried faster than the larger

ones, and so the drops strike together and unite until they become too heavy to be longer carried upward, and then they descend as raindrops, enlarging as they fall. The stronger the upward current, the farther upward the drops are carried, and the larger they become before reaching the earth. There is no rain, though there may be fog or mist, without an ascending current to gather the small particles into larger ones.

The evaporation from the ocean's surface in the torrid zone is about one-fourth of an inch a day. The greater portion of this vapor is carried by the trade winds into the region of equatorial calms. The moisture brought to this belt enters the column of rising air, and is carried upward into the cooler air. This cool air condenses the moisture of the ascending warm air, and it falls in heavy rains.

The cloudiness of the sky defends the earth against the sun's heat, and the downpour of the cool rain lowers the temperature. This is in part the explanation why it is not warmer in the regions near the equator than at some degrees north and south of it.

If the evaporation from the sea's surface returned in rain to the surface from which it came, the average rainfall would be the same in amount as the average evaporation, or one-fourth of an inch daily. This would be about 90 inches annually or 7½ feet. But since this vapor falls chiefly in the rain belt near the equator, the amount in many places is much in excess of this. The rain belt is not much more than 300 miles in width, but as this belt swings north and south through the year, it reaches during the year a much wider zone. When is the rain belt farthest north? When farthest south? At what seasons does it cross the equator?

"All the rivers run into the sea, yet the sea is not full: into the place from whence the rivers come, thither they return again."— Ecclesiastes I. 7.

REVIEW QUESTIONS.

Which holds the more moisture, warm air or cold? How does an ascending current of air unite fog drops into raindrops? Why is the region of equatorial calms a region of heavy rainfall? What effect on the temperature does the rainfall in equatorial regions have? Why? Where are the regions of greatest rainfall?

All steep land slopes exposed to a sea wind are regions of great rainfall. Why? Where do you find illustrations? See map. Do the eastern or western slopes of the Andes have most rainfall? Why? What effect has this upon the vegetation of the valley of the Amazon? Is the result the same at the southern end of the continent? For what reason?

Think of a particle of water and trace it from the ocean back to the ocean again.

In which zone is the greatest rainfall? Least? Think first, then look on the rainfall map to see.

In the United States what are the directions of increased and decreased rain?

In temperate zones the larger rainfall is on the western coasts, in the torrid zone on the eastern. Give reasons why this is so.

Which have the greater rainfall, the windward or leeward side of mountains or regions?

Compare the rainfall in the regions of the Alps and on the plain of Russia.

In the northern hemisphere is a north wind over land a wet wind or a dry wind? Why? A south wind? Why?

Are the trade winds wet winds or dry winds? Why?

The best part of Africa is the southern part. Why? Is this so with South America? Why? Is this so with Australia?

Which is the better part of Australia, southeastern or southwestern? Why?

Which has the warmer climate, Quito or Para? At which are the extremes of heat and cold greater?

What difference is there between the climate of Europe and that of Africa? What between that of Africa and that of Asia?

Where are the two regions of greatest rainfall in the United States? Are these regions of great change of temperature during the year? From one of these regions the rainfall diminishes toward the north; from the other, toward the south. Explain why this is.

148. Deserts.

If a cold wind strikes a warm land surface, is the wind made warmer or colder? Does it take up moisture as it becomes warmer, or give it off? What effect on the land does this have? Does wind bring rain to lands warmer than itself or cooler than itself?

If a warm moist wind blows against the side of a mountain, what change in temperature takes place? What change in moisture? If it continues over the top of the mountain and blows down along the side and to the plains beyond, is it a rain-bearing or a drying wind? At about what latitude north and south of the equator have we found that the descending equatorial air current strikes the surface? Was this air warm or cold as it ascended from the equatorial regions? Is it warm or cold as it descends? What effect upon the temperature of this region does this current have? What effect upon the moisture of the lands on which it strikes?

There are desert regions in many parts of the earth at about 20° to 30° from the equator. Why?

A region is arid whenever the moisture from the ocean does not reach it or reaches it in small degree, whether because the ocean is far away, as it is from central Asia, or because all the rain borne by the winds has fallen upon the highland before reaching it, as is the case of the Pacific coast of South America and the mountain and plateau region of the United States.

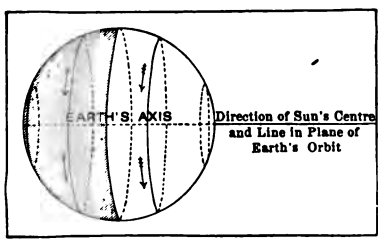
In such regions the temperature is usually high in the day time and low at night; the winters are severely cold and the summers are excessively warm.

In each of the continents there is a certain portion that on account of wind currents and elevation does not receive sufficient rainfall for the growth of an abundant vegetation. If the rainfall is less than ten inches per year, the grasses do not grow; and the region is desert.

In Europe there is no region that can be called actually desert. Europe is so small a continent and is so well situated with reference to winds and surrounding waters, that no portion receives less than the needful amount of rain. But a part of central Russia, the great plain north of the Black Sea, is very nearly a desert region.

149. The Seasons.

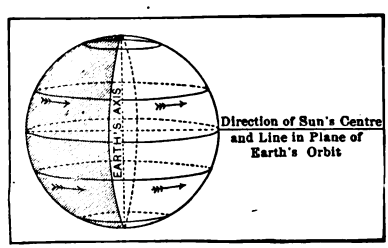
The Movements of the Earth. — If the sun and the earth had no motions, it is evident that one side — one half — of the earth would be lighted by the sun, and the other half would be in darkness except for the light coming to it from the moon and stars. The side toward the sun would have perpetual day, and the opposite side, perpetual night.



Effect of Rotation.

Let us now suppose the earth to turn on its axis, and consider the effect. Suppose the axis of the earth to point as in the figure above, what difference would the turning make?

The rotation of the earth would not bring any parts of the earth into the light nor carry any into the darkness. The part toward the sun would be in perpetual day, and the other in perpetual night, even though the earth did turn on its axis.

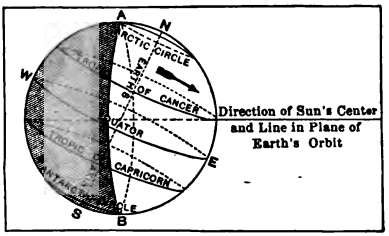


Effect of Rotation.

If the axis had its direction as in this figure, every part of the earth would be turned toward the sun in each revolution of the earth, and there would be day and night in every

part of the earth at every revolution. The time of one revolution being twenty-four hours, we should have the days and nights everywhere equal throughout the world, and each twelve hours long.

Inclination of the Earth's Axis. — If the earth turns in the direction represented by the arrow in the figure below, the point *A*, which is placed just between the light and the darkness when the earth stands as in the figure, will move toward the sun for twelve hours, and then away from it for twelve hours, when it will have arrived again at the place of beginning, but will never have escaped from the rays of the sun. So will it be with any place between *A* and *N*. On the contrary, the point *B*, which is in the darkness, will not come into the light at all, and every point between *B* and *S* will have perpetual night. A point like *E*, half way between *N* and *S*, will be twelve hours in the light and twelve hours in the darkness. Points between *A* and *E* will be in the light more than twelve hours out of twenty-four, and points between *E* and *B* will be in the light less than twelve of every twenty-four.



Rotation of the Earth.

Let us now suppose the earth is in the same position on the other side of the sun, and study the case once more.

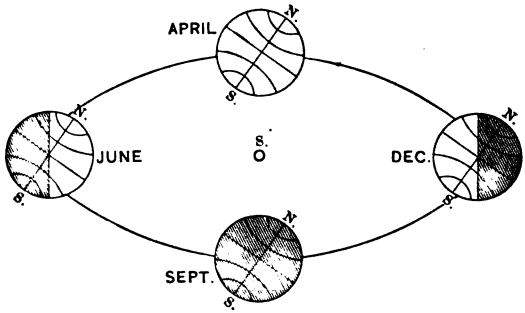
Will point *N* ever get into the sunlight? How about point *S*? *A*? *B*? *E*? Points between *A* and *N*? *B* and *S*? *A* and *E*? *E* and *B*?

It has been found by observation that the earth moves around the sun once in a year, and that its axis always points in the same direction, as is illustrated by the figure on the next page.

150. The Change of Seasons.

On June 21 the position of the earth is the same as was shown in the last figure. The North Frigid Zone is in the light for the whole twenty-four hours. The North Temperate Zone is in the light more than half of every twenty-four hours, and the sun is nearly overhead.

The South Temperate Zone receives light and heat but a small part of every twenty-four hours, and the sun shines very obliquely upon it.



The Seasons.

The South Frigid Zone gets no light or heat from the sun when the earth is in the position we have mentioned, and of course is very cold, as is also the South Temperate Zone.

The North Temperate Zone receives the greatest amount of heat that comes to it at any time of year, and it is early summer.

If we study the conditions December 21 when the north pole of the earth is turned from the sun, shall we find the North Temperate Zone receiving much or little heat? What season will it be? What season in the South Temperate Zone?

In April and September we find the axis of the earth inclined neither toward nor from the sun, but the sun shining from pole to pole and all parts of the world receiving their

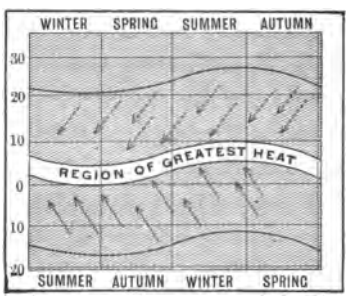
average amount of heat. What season is it in the North Temperate Zone at each of these positions? In the South Temperate?

When it is summer in the northern hemisphere, what season is it in the southern? When it is spring in the northern hemisphere, what season is it in the southern? How far north is the sun directly overhead at noon in June?

At what part of the earth is the sun directly overhead at noon on the 21st of December? What season is it then in the northern hemisphere? In the southern?

Since the northern hemisphere grows warmer as long as it receives more heat from the sun than it radiates, or sends off into space, it follows that the weather continues to grow warmer for some time after the 21st of June. The middle of the warm season is more than a month after that date.

The figure below shows you when are the times of greatest heat, how the seasons compare in the northern and southern hemispheres, and how much farther north and south the trade winds extend at one season of the year than at another.



Comparison of the Seasons

The farther from the equator, the longer are the days and the nights at different seasons of the year. At the pole the year is divided between a night of six months and a day equally long. The night is lighted by the moon or by the aurora borealis, a wonderful light of varying forms and colors, of magical beauty.

Why is the climate colder north of us than south of us?

Is the sun ever vertical in any part of the United States? When does it come most near to being vertical in the United States? At that time

which zone has no day? Which no night? At what places are the days then but a few minutes long? At what places then are the nights but a few minutes long?

What is the "midnight sun"? The name will tell you. Where is the "Land of the Midnight Sun"? Describe the course through the sky of the midnight sun.

When the sun is vertical at the equator, where is the midnight sun? Where when the sun is vertical at the Tropic of Cancer? Where when the sun is vertical at the Tropic of Capricorn? At this time where are the days and nights equal?

Where are the days longer than the nights? On the 22d of March where are the days and nights of equal length? Where are the days longer than the nights?

On the 21st of December in which direction does the sun appear from Rio Janeiro?

Why are the days and nights so long within the Arctic Circle? Where is the longest day just 24 hours long? Where is it six months long?

151. Influence of Climate on Man.

Temperate regions are those best adapted to the development of civilization and to human progress. Neither in the Arctic nor in the equatorial regions has any civilization arisen. The North Temperate Zone has been the home of all the important nations that have lived in the past, as it is now the home of all the leading nations of the world.

In Arctic regions the struggle for existence is so severe and the long winter night so breaks up habits of industry, that men work spasmodically and endure hardships rather than labor steadily to overcome them. It is steady industry and foresight that produce wealth and comfort and lead to improvement in ways of living.

On the other hand, the Amazonian forests, equatorial Africa, the East India Islands, are now, and always have been, the home of uncivilized people. Even the white man in these regions degenerates. In a hot climate the heat

enervates, and nature's products are sufficient for man's needs, so that he lacks both the disposition to labor and the necessity for labor. In order that a people may advance generation after generation, population must be so dense that each man can give his effort to one kind of industry, in which he can become proficient and perhaps make improvements. Hence, no region given up wholly to pasturage has ever supported a progressive people. Still less do hunting and fishing alone make a people rich and prosperous. For progress, a people's industry must be founded on agriculture, and then expanded into mining, manufactures, and commerce.

What influence have deserts, plateaus, and mountains upon the separation of nations? What mountain heights separate nations?

What influence have climate and relief upon the density of population in different parts of North America? Which are the densely populated regions of the world?

Name the principal nomadic people. For what reasons have they preserved this form of life?

Name the principal manufacturing people of the world. What are the causes of their superiority in this respect?

152. Commerce.

Development of Commerce. — In the time of Solomon, 1000 B.C., the line of traffic was from India through Persia by way of Palmyra and Damascus to Jerusalem. Afterward the same line continued from Joppa and Tyre and Sidon, on the shores of the Mediterranean Sea, through to Greece, and later, to Rome.

Another route was up the Euphrates to Trebizond on the Black Sea, and thence to Constantinople and Venice, or up the Danube to the interior of Europe and the ports of the Baltic and North Seas.

Trace these routes on the map. After they were established, which was the better situated for commerce, Venice or Genoa?

Tyre and Sidon were once the leading commercial cities of the world. The men of Tyre and Sidon established colonies all along the coast of the Mediterranean and circumnavigated Africa 600 years before the Christian Era.

They brought gold and silver from Spain, tin and copper from Britain, and carried the products of India and Babylon to every part of the then known world.

Later, the commerce of Asia passed to Greece, and from Greece to Rome.

Rome was the first power to strengthen her sway by building good roads. These roads are even now found in every country in Europe, as well as in England. Though built for military purposes, they were used largely for commerce. One passed over the Alps to the Baltic Sea, another crossed the Alps and extended through France to the Netherlands. Another followed the northwestern coast of the Mediterranean to France and Spain.

After the fall of Rome, the Dark Ages followed, and commerce nearly ceased in Europe.

The Mediterranean and Baltic were the homes of piratical craft.

The Crusades proved to be the means of introducing to Europe a higher civilization. Venice and Genoa furnished the ships to carry the armies to the Holy Land, and their naval enterprise extended until they sent their ships to every part of the Mediterranean. They founded colonies in Asia Minor and in the Crimea. They controlled the commerce of Asia and Europe and became the richest cities of the world. At length the Crusades ceased, and in 1453 the victorious Turks took possession of Constantinople.

The obnoxious Turks then controlled all the routes between Europe and southern Asia.

It was the commerce of the Indies that lured Columbus to the shores of the New World. Where Columbus failed, the Portu-

guese succeeded by sailing round the Cape of Good Hope to India. For a short time Portugal was the richest country of Europe. The ships of England and the Netherlands followed this new route, and the commerce of the Orient passed to the merchants of these countries, for though farther from Asia, they were nearer the markets of Europe.

The trade of the Netherlands which had been mainly overland with Venice, became less and less as Venice and Genoa lost their hold upon the Orient. At length Antwerp, having an excellent harbor and opportunities through deep and convenient rivers for interior trade, became a commercial city, and the trade of the Netherlands revived. It was the finest city in Europe, excepting Paris, and became the commercial center and banker of Europe, as London now is. Manufactures of Belgium and the Netherlands, which had been known for generations, were now vastly increased and distributed throughout the world. But the Thirty Years' War with Spain, which ended with the fall of Antwerp, the partial destruction of the city, and the heavy taxation imposed upon the manufactures of the Netherlands, greatly crippled the power of that country, and the seat of trade was transferred to England, which is now the chief commercial nation of the world.

Though dependent upon America largely for her food supplies, England transports these in her own vessels. Her first market is India, and from India come her largest imports. Next to these are those from the United States.

Marseille, Venice, and Trieste are getting possession again of a considerable portion of the trade of southern Europe with the East; and Russia is seeking a way to India and China by railroad from the Caspian Sea.

The parts of the world having the most extensive commerce are the British Isles, western and southern Europe, the United States, and southeastern Asia from the Bay of Bengal to Korea.

Look on the map and see what advantages you can discover

that these parts of the earth have over other parts. Think of the climate and products, of the indentations permitting ships to reach harbors convenient to land and river transportation, of the people and their industries.

Are highlands or lowlands better for commerce? Which have the greater agricultural products? In which do the rivers and waterways afford the better means of transportation? Over which can railways be best built? Through which can canals be constructed?

153. Transportation and Routes of Commerce.

Formerly the vessels carrying goods were owned by the merchants who used them. The skipper and importer and merchant were all one. He took to China the products of his land, and brought back and sold silks, tea, porcelain, and bamboo goods. Now this is divided. One man or company owns the ships and brings the goods which the importer purchases. The importer sells the goods to wholesale houses, who in turn sell them to the retailers. There are agents, living at the foreign ports from which we obtain goods, who buy the goods the importer wants and send them to him by ship. The ships, too, are now owned by transportation companies, and in most cases sail back and forth between certain ports. Several such ships make a "line," and sail regularly on certain days on their voyage. Ships not sailing back and forth in this way, but taking a cargo from one point to another, and then a new cargo to some other port, are called "tramps."

Ocean Highways. — There are certain courses across the oceans that have been found speedier and safer than others, and vessels follow these ocean highways in their voyages.

Vessels going from New York to Liverpool do not steer straight across the Atlantic, but follow the course of the Gulf Stream. Coming back, they steer north of this stream, and get the benefit of the current flowing south from Baffin Bay, skirting Newfoundland and Cape Cod.

Vessels sailing from Europe to South America or through

the Straits of Magellan to the Pacific follow the African coast as far as the coast of Guinea, where they turn westward, and go straight across the Atlantic to Brazil, then southward along the South American coast. Why?

Ship Canals. — That transportation by water is much cheaper than by land is a fact which influences greatly the location of cities.

Of the sixteen cities in the United States having a population of 200,000 and upwards, all have water transportation; and of the twelve cities having a population from 100,000 to 200,000, all except Indianapolis and Denver are on navigable waters.

The great ship canals of the world are St. Mary's in Michigan, the Suez Canal, the Manchester Canal, and the North Sea and Baltic Canal.

The Erie Canal is an example of a waterway of great value, but it transports boats or barges only.

Some proposed canals of importance are the Nicaragua, or Panama Canal, and the Kra Canal.

The Kra Canal is a proposed canal across the Isthmus of Kra, connecting Malacca with the rest of Asia. It would be but 22 miles in length, and would shorten by 1500 miles the distance between the Suez Canal and ports of China and Japan.

For France it would be particularly useful, as her ships could go between her Asiatic provinces and Marseille without being compelled to stop at Singapore.

What have you learned about the other canals?

QUESTIONS.

Describe a voyage from Irkutsk to Canton. State the route and the articles carried for exchange. Describe a voyage from St. Petersburg to Trieste. Give an account of a caravan journey from Tripoli to Khartum. Describe a voyage from Marseille to Alexandria.

Name the waters through which a vessel would sail from Canton

to St. Petersburg. From London to Constantinople. From Venice to Sebastopol.

What effect have the Alps upon the commerce of Europe? Point out the advantages which are offered to commerce by the rivers of north Germany. What advantage to England is its insular position?

Make a comparison of the German ports of the Baltic and those of the North Sea as to opportunities for commerce.

Which are the most important ship canals of the world? Is the Suez Canal a help or a hindrance to the commerce of Venice? What parts of the New World would profit directly or indirectly by a ship canal across the Isthmus of Panama?

REFERENCES.

NINETEENTH CENTURY, March, 1894.
CHAUTAUQUAN, December, 1894.

154. Great Cities of the World.

The cities of the world having a population of more than half a million are named in the list below, and their population approximately given:—

1. London	5,600,000	11. Constantinople	900,000
2. Paris	2,500,000	12. Calcutta	850,000
3. Canton	1,600,000	13. Bombay	800,000
4. Berlin	1,600,000	14. Brooklyn	800,000
5. New York	1,500,000	15. Moscow	800,000
6. Vienna	1,400,000	16. Bangkok	600,000
7. Tokyo	1,100,000	17. Glasgow	600,000
8. Chicago	1,100,000	18. Naples	500,000
9. Philadelphia	1,000,000	19. Liverpool	500,000
10. St. Petersburg	1,000,000	20. Peking	500,000

China has several large cities that according to some authorities should be included in this list; but their actual population is a matter of much uncertainty.

How many cities in the world have a population of one million or more? How many have a population between a half million and one million? Which are the two largest cities? Name the four cities hav-

ing a population of about one and a half million. Name the four cities having a population of about one million. How many of the twenty great cities are in the United States? In Great Britain? In Europe? In Asia? In what part of Asia are all its very large cities?

All these cities, with one exception, have good harbors and communication by navigable streams or railroads with a large and densely populated agricultural region.

How many of them are capital cities? How many are on estuaries? In what latitude do they lie?

Let us study some of the great cities of the world as we did the great cities of the United States, not so much to learn new facts about them as to learn why they have become great.

London. — What reasons can you give why London has become a large city?

Paris. — Paris lies in a rich agricultural basin at the head of navigation of the Seine, and near the junction of several branches of this river. Havre is its harbor, and it is the only good harbor on the north of France having good rail and water communication with the interior. The navigation of the Seine and its tributaries has been improved, and canals dug, so that Paris has the best system of interior waterways in the world.

About 900 years ago Paris became the capital of France. This brought into Paris many of the nobility and leading citizens of France. About 700 years ago the University of Paris was founded, and soon 20,000 students flocked to the city every year from all parts of France and surrounding countries. What effect on the growth of the city do you think this has had?

Canton. — Canton is the chief commercial city of China, and was for 200 years the only city where foreigners were allowed to reside or do business. It has a fine harbor about 70 miles from the sea, and a navigable river connecting it with rich interior provinces.

Berlin. — Berlin is the capital of Prussia and of Germany. Though Berlin is not located upon any navigable water, it has excellent railroad facilities, and is the capital of a great empire. It has been an important city for 600 years.

Its manufactures of cotton and linen, its great iron foundries, and its fine porcelain works, and recently its great railroads connecting it to the two highways of commerce, through the valley of the Oder running to the Baltic and the valley of the Elbe to the North Sea, have at length given it commercial importance. But of greater influence have been the court and the government offices, and its great university. It is the central and chief city of a great and thriving nation.

Vienna. — Vienna is the capital of Austria, and is pleasantly situated on the Danube, in the line of overland communication between India and Persia with central Europe. The country making Vienna its center of trade has a varied climate, and therefore varied products, which create an extensive domestic commerce. At Vienna occurs the only break in the chain of mountains separating the northwestern from the southeastern part of Europe. The valleys of the Danube and the Oder form a highway from the Black Sea to the Baltic. The route from the Adriatic to the Baltic intersects this route at Vienna. Vienna is the capital of a great empire, and in 600 years has therefore grown into a great city.

Tokyo. — Tokyo, formerly called Yedo, has been the capital of Japan for 300 years. At first the nobles of Japan were compelled to reside half of each year within its walls. What effect on the city do you think this had? It has a fine harbor at the head of a bay near the mouths of three navigable rivers.

St. Petersburg. — St. Petersburg, like Berlin, owes its importance largely to the fact that an emperor and man of genius determined to make it his capital. When and by whom was it founded? This city lies farthest north of all the great

cities of the world — about 60° north latitude. It is the only Russian city having extensive trade with northern and western Europe. It is connected by ship canal with Kronstadt, its port, by railroad with the great cities of the empire and of Europe, and by canals with the interior of Russia. During the winter the transportation of goods by sledges is convenient, and so inland communication is greatest at this time.

Moscow. — Moscow is a very old city and was once the capital of Russia.

Moscow lies in the black earth region of Russia, famed for its fertility, and in the midst of a dense population that needs a trading center. It is at the crossing place of roads from all quarters, — roads east and west and roads between the Caspian and the Baltic Seas. Here starts the great highway to Siberia.

Naples. — Naples is one of the great cities of the world.

Magnificently situated upon a fine bay affording a good harbor, and having an admirable climate, it is sought as a place of residence. Railways connect it with central and northern Italy, and it has steam connection with all the principal Mediterranean ports.

Other Large Cities. — Explain why New York, Chicago, Philadelphia, Constantinople, Calcutta, Bombay, Brooklyn, Bangkok, Glasgow, Liverpool, and Peking have become great cities.

REVIEW QUESTIONS.

Why has Manchester in England recently spent a vast sum of money to make a ship canal connecting it with the Irish Sea? What effect on Manchester will this have? What effect on Liverpool? What conditions favor Canton? Venice? Antwerp? Bremen? Baltimore? St. Louis? New Orleans? Detroit? Cleveland? Buffalo? San Francisco?

What effect on the prosperity of Montreal have the Lachine Rapids?

Would Bremen and Hamburg be more prosperous than they are, or less so, if the rivers on which they are built emptied east of the peninsula of Jutland instead of west?

Why is there not a large city at the head of the Gulf of Bothnia?

Singapore is at the extremity of a peninsula. Is this ordinarily a good place for a city? Why is this city so located?

The voyage of Vasco da Gama, which discovered a passage around Cape Good Hope, was very injurious to Venice. Why? What effect on England did it have?

In what respects do the cities of China differ from our cities?

Describe some important cities of the Mediterranean.

Which is best situated for commerce, — Barcelona, Marseille, Genoa, or Venice? What are some of the advantages and disadvantages of each?

155. Growth of Continents.

Wearing down of Land. — You have seen that water, in the form of streams, snow, ice, and waves, and aided by heat and cold and its power of dissolving minerals, is continually carrying down soil and rock from the mountains, hills, and plateaus, to the plains and valleys below and at length to the ocean. The wind also moves the soil and often carries one or two inches a day of light soil from a surface many miles in extent. If all this went on long enough without change, all the land would finally be brought nearly to the level of the ocean, all the lakes would be filled up, and the continents would become great plains sloping gently back from the ocean.

Tennyson says —

> "The hills are shadows, and they flow
> From form to form, and nothing stands;
> They melt like mists, the solid lands
> Like clouds, they shape themselves and go."

Would you not like to know how the mountains came to be and why they are not worn smooth by the waters and carried away to the ocean?

The Beginning. — The earth was at one time "without form and void."

The matter of the solid earth, of the waters, and of the air was one unseparated mass. But in time the air rose above the waters, and the materials of the rocks sank beneath them. There was then a world whose outside was one great ocean supported on the rock bed beneath it, with the air above it, but no land; for God had not yet caused the dry land to appear.

The earth was then very hot and was softer and larger than now.

The exterior part of the earth cooled first and made what we call the *crust of the earth* over the hot interior, which then cooled more slowly than before, but still continued to cool.

The interior of the earth is still exceedingly hot, but the space in which the earth moves is exceedingly cold, and it is believed that the whole earth is gradually cooling. Since it is cooling, it is contracting or drawing together into smaller space. As the heated interior contracts, it draws away from the hardened crust of the exterior and allows this crust to sink in places. As the crust falls in upon an interior smaller than before, it is too large to fit the interior, and wrinkles and cracks as it sinks downward.

The bed of the ocean is the part of the crust which has thus sunk, and the land is that part which has projected above the waters. The first land projecting above the waters became the beginning of the continents.

The sinking of the ocean basins produced an enormous sidewise pressure along the borders of the continents, which caused the land at some distance from the shore to give way and make an upward fold. The depressions of the ocean beds have had mainly a north and south direction, and so the continents have taken the same general direction with a large wrinkle or mountain range on the side of the greater ocean, which has, of course, exerted the greater pressure sidewise as its basin has sunk.

This rising and sinking of the land is still going on.

The land and the sea do not remain always at the same height with reference to each other. In some places there are old sea beaches on the sides of the mountains near the sea. At others, as on the coast of Greenland, are stone buildings now partially submerged by the ocean. What does this show? All the southern coast of Scandinavia, with The Netherlands, Belgium, and northern France, appears to be at present slowly sinking, while northern Scandinavia and the west coast of South America are slowly rising.

The west coast of North America has also risen recently.

In New Jersey and Long Island we can see that the water is year by year making its way farther in upon the land, destroying farms and fashionable watering places. This part of the earth's crust is sinking.

The map on page 9 of Part II. shows you which coasts are now rising and which are sinking.

Highlands of the Continents. — These changes of level may be slow and imperceptible or sudden and startling.

Most of such changes are very slow and go on for a long time. You must think of mountain ranges as rising very slowly, a foot or two in a year, for thousands of years.

Probably the highest ranges are now rising about as fast as they wear away. Lower ranges are probably not now rising, but are slowly wearing down.

The Laurentian highlands, the oldest mountains of North America, are now quite low.

It was formerly thought that all mountains had been pushed up from below, that the earth's surface had been tossed into great billows by some vast force underneath, and that the mountain ranges were the crests of these earth waves, while the valleys were the hollows between them made by the sinking of the crust.

If we think of this as coming about slowly, this view is nearly the truth as to the principal mountain ranges.

But many mountains and nearly all hills have been formed, not by a force from beneath, but by forces around them, by the wearing down of the valleys between them by the action of water in the form of rain, frost, ice, and streams.

Sedimentary Rocks. — When the layers of sediment deposited under water by rivers, waves, and currents have been subjected for a long time to great pressure by being buried deep under other layers deposited above them, changes, resulting from chemical action or from the heat of the interior of the earth, have taken place, and the layers of sediment have been changed into layers of rock. Such rocks are called sedimentary rocks because made from sediment, and they contain within them the remains of plants and animals that lay in the mud before it was changed to rock. These remains are called fossils.

Nearly all the rocks of the United States are sedimentary rocks.

Igneous Rocks. — The first rocks raised above the waters could not have been sedimentary rocks, for sedimentary rocks are produced from the wearing down of other rocks. The first rocks are those first cooled from the melted state, and are called igneous, a word meaning produced by fire.

By finding the igneous rocks in any continent, we can learn what part of the continent first rose above the waters.

Beginning of North America. — In our continent the first land was a mountain range, still existing, but much worn down, that rose from the sea north of where the St. Lawrence now flows.

Afterwards the Alleghany Mountains slowly raised their heads above the waters, forming an extension of the first wrinkle southward. Later the Rocky Mountains appeared.

North America then had the shape indicated in the figure on the next page in which the young continent is white and the waters are shaded.

In those early days you could have sailed in any direction in the interior part of the United States over waters several hundred feet deep. There was land in the north around Hudson Bay, land on the Atlantic border, and long narrow islands in the Rocky Mountain region.

That ancient Atlantic borderland we now call the Blue Ridge.

Beginning of North America.

Beginning with the geography of North America shown by this figure, you must imagine time moving slowly on during long cycles of years. The rains fell upon the land just as they do now, washing it away, probably more rapidly; and the waves of the ocean indented the coast lines. But you must bear in mind that there was also an upward movement of the crust, by which the land was continually lifted higher and higher, so that, though the rains and the waves both wore away the rocky land, the continent grew larger.

Gradually the land grew broader, southward from Canada and Wisconsin, westward from the Blue Ridge.

The waters of the Gulf Stream of those days moved through what is now the Gulf of Mexico, through the western Mississippi valley, along the western border of the great inland sea in a northwest direction to the Arctic regions. The steady warm currents, deflected up the region we now call the Ohio valley, produced conditions favorable to an abundant life.

Limestone. — The life was largely that of soft animals having shells; there were coral-forming radiates like those that make coral to-day, and there were starfishes and stone lilies, or crinoids. These were fixed to the sea bottom, and when they died they left their stony parts to be converted by the waters into limestone. This is the origin of the limestone which underlies the East Central States, and mingling with the soil adapts it to-day to agricultural purposes.

The Great Lakes. — While the Great Lake system did not always exist in its present shape and grouping, Lake Superior is very old, as is also a river system in the direction of the St. Lawrence. Lake Erie is the youngest of these lakes and may have been recently formed.

Lake Superior Copper. — In this early period, there was an outburst of melted rock, which we call trap, underneath Lake Superior. The appearance of the rock shows it was discharged into water. Along with this molten rock came large quantities of melted and dissolved copper, producing the now famous copper mines of the Lake Superior region.

Salt. — At one time this great interior sea formed on its eastern border a shallow bay with great salt marshes extending from central New York through Canada and even to Michigan. The waters of the salt ocean swept into this marsh or salt lake, evaporated, and left the salt in the sediment of the lake, just as we now see done at Great Salt Lake. Afterward these salt layers were covered with stony deposits.

The salt industries to-day of central and western New York, Canada, and Michigan have this origin.

Natural Gas and Petroleum. — Finally there came to be a new ocean life, the fishes. The waters swarmed with life, animal and plant. The remains of these were buried in the muddy sediment of the inland sea, under the mass of rocky deposits. Afterward under this rocky blanket these animal and plant remains were distilled by the heat which came up from the interior of the earth, making the natural gas and petroleum which are now taken out of the earth for the use of man.

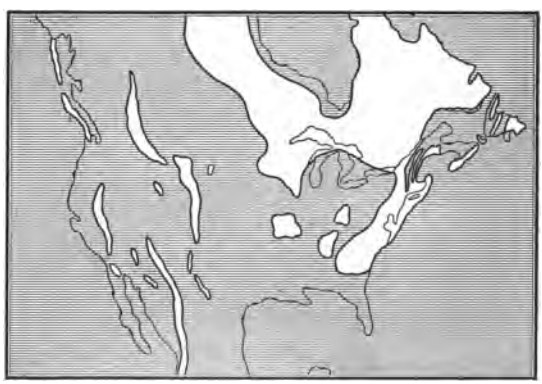
Coal. — In the coal-making age a still more important and notable product was prepared for the needs of the human race. There had been a general upward tendency of the crust during the previous ages. During this age in portions of this inland sea, where previously lime-secreting animals flourished, the sea bottom rose so that the waters became so shallow that for long years the fresh water of the rains and of drainage from the elevated portions of the continent to the north and east of them produced a vast freshwater marsh.

Vegetation also attained a luxuriant growth. Then the ground sank again, and the water of the sea came in, burying the dense forests under sand and other deposits. Even the lime-secreting animal life returned. For thousands of years the sea prevailed till many feet of deposits were formed over the submerged forests. Then the ground rose again, and another forest growth succeeded, followed by another long period of submergence, with again a subsequent elevation. With every submergence a layer of coal was formed. Such was the origin of our great coal areas.

Iron Ore. — As swampy regions are favorable to the formation of iron-ore beds, we are not surprised to find great beds of iron common in or near the coal areas. And so this valuable ore and the coal necessary to its reduction are conveniently near together.

We call this period of activity in mountain growth the Appalachian Revolution. It built the Appalachian ranges, and produced great changes in the climatic and in other conditions of the globe. As a consequence there were great changes in the animal and vegetable life. This was followed by a more stable condition, but recently the Charleston earthquake has shown that the shrinkage of the earth is still producing a strain in that latitude.

The Appalachian range from northern Alabama to Mount Washington is nowhere very lofty, not in the highest part



Growth of North America.

much over a mile. This is due to the wearing away by the rains, the snows, and the frosts that has been going on from the first. Had it not been for this they would be forty thousand or fifty thousand feet high. We may generally conclude that low ranges of mountains are the oldest.

River Courses. — An interesting feature of mountain ranges is the river courses through them. Notice how the Hudson River coming down from Mount Marcy, of the Adirondacks, makes its way in sweeping curves amid lofty heights on either side. Whence comes the gorge through which the river finds

egress to the sea? The river is older than the mountains, and as these gradually arose, the running water by erosion maintained the level of its channel and hence was not shut off by the rising highlands.

Rocky Mountain Region. — While the Appalachian Mountains were forming, the Rocky Mountain region was a rather scattered archipelago with one or two very long islands.

Finally, in the same manner as the Appalachians had been previously formed, the great Sierra range was produced.

Later, the eastern margin of this continent was crumpled into a mountain range, the Wasatch, which movement of course widened the land toward the east.

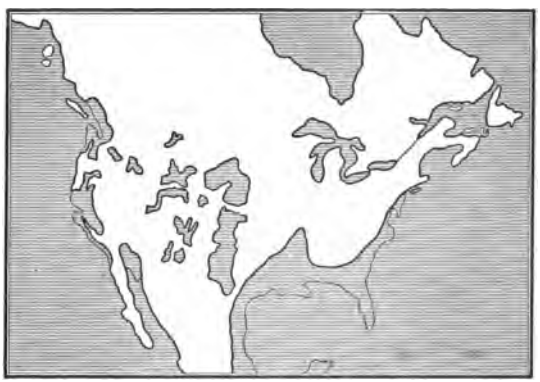
At this time also, by the general elevation of the crust under the waters east of the Wasatch, a still more important change in the growth of the continent was effected. For the waters of the Gulf of Mexico, which hitherto had flowed unchecked across the land from south to north, were shut out from the interior, and the two continents at last became one. The channel which this broad stream had traversed for so many ages became the region of the plains.

Alkaline Plains. — When the Gulf waters had been excluded from the interior of the continent, and the western part of the former Mississippi sea had thus become dry land, the plateau region continued for long ages to be occupied by great lakes or shallow bays. The final elevation of the entire Rocky Mountain region caused these bodies of water to disappear, but the ground was left either alkaline or salt, rendering it unfit for agricultural purposes.

Mineral Deposits. — Another feature we may notice is the wealth of the west in valuable metals. Gold, silver, copper, lead, iron, and other metals exist in the rocks everywhere. But where the heated rock has come into contact with water, these metals are dissolved, and brought into fissures that may be formed in the rock.

Underneath the mountains the heat is always present, and water, with heat and pressure, easily dissolves what ordinarily is not soluble.

The movements of the crust producing the mountains produce also the fissures; the water, loaded with ores and other minerals in solution, goes into the fissures; the pressure and heat are removed by the uplifting, and the water then deposits the metals and ores in the fissures. When by erosion of the rains and rivers these veins are exposed, we have a gold,



Growth of North America.

silver, copper, or other mine. The intensity of the action that has taken place in all the Rocky Mountain region is shown in the great number of rich mining districts throughout the entire length of the mountain system.

REFERENCES.

DANA: Manual of Geology. LE CONTE: Elements of Geology.
SHALER: First Book in Geology. SHALER: The Story of our Continent.
CANADIAN MAGAZINE, July, 1893.
CHAUTAUQUAN, Nov., 1889: The Cause of Geographical Conditions; Dec., 1889: The Work of Under-Ground Water; Feb., 1890: The Work of Waves.
NATIONAL GEOGRAPHICAL JOURNAL, January and December, 1895.

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